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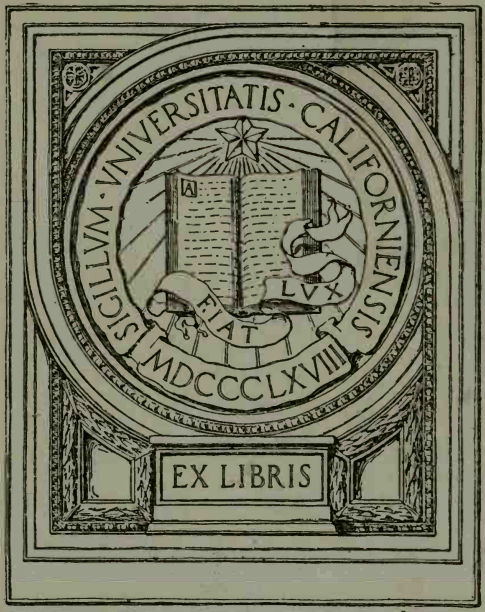

Diet Kitchen
University Hospital

MODERN DIETETICS

LULU GRAVES

MODERN DIETETICS

FEEDING THE SICK IN HOSPITAL AND HOME

WITH

SOME STUDIES ON FEEDING WELL PEOPLE

BY

LULU GRAVES

DIETITIAN LAKESIDE HOSPITAL, CLEVELAND

ST. LOUIS

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"Some ha'e meat, and canna eat,
And some wad eat that want it;
But we ha'e meat, and we can eat,
And sae the Lord be thankit."

—*Burns.*

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PREFACE.

With the modest intention to help the hospitals of this country solve some of the intricate problems of feeding the sick, *The Modern Hospital*, a monthly journal devoted to the interests of hospitals, sanatoriums, and allied institutions, prevailed on Miss Lulu Graves, dietitian of Lakeside Hospital, Cleveland, Ohio, to prepare a series of papers under the general title of "Feeding the Hospital," dividing the topics so that a paper could be published each month until the series was completed. There were eight of these papers.

After the publication of a few of the papers it became evident that they were attracting more than ordinary interest. A number of domestic science schools adopted them in their curriculums, teachers in some of the better medical schools used them in their class work, and more than one university, in the appropriate department, included them as part of the work in physiology and physiological chemistry.

So great became the call for copies of the papers that all back numbers of *The Modern Hospital* containing them were soon exhausted, and it was then decided to republish them in volume form, making such additions and corrections as were necessary to have them serve the greatest possible purpose. This monograph, to which has been given the title of "Modern Dietetics," is the result of the decision to publish these papers in volume form.

Most fortunately the interest of Professor Lafayette B. Mendel was attracted, and, by giving some of his valuable time, he has been good enough to read the matter critically, making such alterations as were necessary to adjust some of the scientific and controversial statements.

At Professor Mendel's suggestion some pages have been added on the chemical constituents of the chief foods employed in institutional feeding, and Miss Graves has been persuaded to append some of the special recipes designed by herself to meet the requirements of the medical profession in her own hospital.

It is believed that the little book will prove of value to physicians, medical students, hospital administrators, dietitians, and nurses, and, if this value shall be realized, those who have been responsible for the publication of the volume will be abundantly repaid.

PREFACE ADDENDUM.

Since the completion of the material for this book the United States has become engaged in a war that will materially affect conditions pertaining to the food supply. It is not, however, deemed advisable to revise the text of the book on that account, as these conditions will change from time to time until the situation again becomes normal. If in the meantime a question relative to this changed state of affairs should occur to the reader, the author will be pleased to discuss the matter either through the Department of Dietetics in THE MODERN HOSPITAL or by personal correspondence.

July, 1917.

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MODERN DIETETICS.

INTRODUCTION.

BY PROFESSOR LAFAYETTE B. MENDEL, SHEFFIELD SCIENTIFIC SCHOOL, YALE UNIVERSITY, NEW HAVEN, CONN.

"It will, I think, be generally admitted that an accurate acquaintance with the quantity and quality of food necessary to the maintenance of human health and life, under different circumstances, is a matter of great interest to everyone; but it is more especially so to statesmen, magistrates, naval and military officers, physicians and surgeons, governors of hospitals and other public institutions, and the guardians of the poor. To them are intrusted the care and supervision of the inhabitants of prisons, ships, garrisons, armies, asylums, hospitals, and poor houses, and on their knowledge or ignorance depends the health or disease—the life or death—of a considerable portion of the community."

This quotation from the American edition of Pereira's "Treatise on Food and Diet" deserves almost the same emphasis today as at the time of its first publication in 1843. Recent decades have doubtless witnessed important advances in the methods of institutional management. Efficient hospital organization is becoming recognized as an essential factor in the progress of practical medicine; the newest contributions of science are being drawn on to furnish novel helps, not only in the administration of the modern hospital, but especially in their application to therapy; mechanical devices of the latest type, new remedial agents, and aids to diagnosis are installed as promptly as they are introduced and sometimes before they have been adequately investigated. This is,

however, as it should be, for every hospital ought to become, in a broad sense, a laboratory for testing the latest suggestions of the inventor or the research worker. A liberal attitude in this respect is in harmony with the public welfare and the greatest good to the institution's patients as well.

To the student of nutrition it seems as if one feature of hospital service has been unduly neglected, so that it lags behind the progress in this branch of physiology. Dietetics in the hospital, as in other institutions, has not received the recognition which it deserves both as an essential to the management of the patients and as a scheme in the field of treatment. For twenty years the movement for the popularizing of current knowledge of the elements of nutrition has received widespread attention in the United States. This country need not be ashamed of the contributions of its own institutes and investigators in this field of science. Newspapers and popular magazines are promptly translating the findings of the laboratory into the language of the intelligent nonprofessional reader. But the newer contributions—the energy factors, the calorie idea, the specific features of diet and its culinary aspects, the relation of dietary components to the alimentary responses, etc.—have been slow in finding their way into the rigid routine of the average American hospital.

The reason for this underestimation of dietetics and dietotherapy may be found, I believe, in the neglect of these subjects as a part of the education of students of medicine. Where ignorance prevails, indifference is likely to follow. The situation is reflected further in the inadequate instruction of the trained nurse in the science of dietetics and the refinements of the culinary arts which can find an application at the bedside. Where problems of economy and cost must be considered on a large scale,

it has not been easy to enforce the prescription of diet to the individual. Neither the average physician, the nurse, nor the hospital superintendent has been educated up to the highest standard.

There are signs of the growth of a progressive spirit more in harmony with the advanced suggestions of the physiology and pathology of nutrition. The medical curriculum will inevitably be forced to respond to the demands of rational dietetics; and, furthermore, the physician is no longer the sole arbiter in matters of diet. The trained dietitian has come to stay. This monograph by Miss Lulu Graves is one of the timely attempts to point out the possibilities of progress and to encourage a more tolerant attitude toward dietotherapy and a rational scheme of nutrition applied in the hospital.

CHAPTER I.

MANAGING THE INSTITUTION COMMISSARY.

FORMER METHODS OF BUYING—NECESSITY OF JUDICIOUS BUYING AS TO QUANTITY, QUALITY, AND PRICE—PROPER STORAGE AND CARE—SCIENTIFIC PREPARATION—DEFINITION OF A GOOD COOK—METHODICAL DISTRIBUTION.

Formerly it was a common custom among wholesale dealers to dispose of their less desirable products to institutions. It was usually a safe procedure, as there was no one in authority who took either time or trouble to pass judgment on the food materials when delivered, or to see that they received the proper treatment after delivery. This gave to the wholesale dealer the same opportunity to dispose of much of his stock that might otherwise mean a loss as is given to the retail dealer by the family which orders the day's supplies by telephone or sends a child to the store to do the purchasing. These methods are no longer prevalent in either homes or institutions conducted on a business basis, with standards of efficiency and economy. As every person, sick or well, connected with an institution in any capacity must eat, it is a self-evident fact that the commissary department is one of the most important, and it must be given the same intelligent thought that is given to any department of the whole organization.

The foundation of a well-ordered commissary department is judicious buying. Buying judiciously means not only buying food materials of a desirable quality, and which contain the proper nutritive values for the needs of the people to be fed, at a reasonable price, but also keeping qualities and storage facilities must be considered, as well as discounts offered for cash or prompt payment of bills.

As the keeping qualities depend so much on the storage facilities, the two cannot well be separated. In the majority of hospitals and other public institutions the store room is apt to be space in the basement which cannot be utilized for any other purpose, or which remains after all other rooms are provided. If there happens to be ventilation in this room, well and good; if not, it will do very well for a store room anyway—is the general decision. This in itself is very poor economy. We are all well aware that a dark, damp room is conducive to the growth of molds and other forms of microorganisms which may cause the rapid deterioration of fruits and vegetables, either fresh or dried, and also that it is very difficult to keep such a room free from vermin.

Fruits and vegetables should be kept in a room that is not only well ventilated, but through which currents of air of a fairly even temperature are passing. In one of the larger hospitals in the East some attention has been given to finding the best temperatures for storage, the conclusion having been reached that most vegetables keep best at a temperature of 42° F., but that potatoes are better kept at a temperature of 60° F. and sweet potatoes at 70° F. If proper conditions are not maintained in the store room, fruits and vegetables must be closely watched, and the overripe or defective be frequently sorted out, and thus through much handling is added one more cause for rapid decay, not to mention the extra labor involved.

Cereals are very difficult to keep in good condition in a warm room unless in sealed packages, and this makes them considerably more expensive. The prepared cereals, particularly, are apt to become "wormy" even in sealed packages, and others may become rancid. Flour will keep better in cloth than in barrels. Dried fruits, too, may become "wormy" or "musty." In fact, there are few, if any, staple articles which are commonly kept in the supply

room which do not keep better in a clean, dry, well-lighted, well-ventilated room, even though they may not actually spoil elsewhere. Moreover, we are all inclined, and not without reason, to associate a dark, damp room with mice, roaches, and other vermin, so that naturally we dislike to associate our food materials with that kind of a place.

Besides temperature, ventilation, and light, another important feature of a store room is space. If the conditions are favorable for keeping supplies, it is of great advantage to be able to buy in large quantities; particularly is this true of apples, potatoes, and all vegetables that can be bought for a much lower price at the time they are being gathered and stored for use during winter.

If enough business is given to them to warrant their doing so, some of the larger firms will inform their buyers when the probable lowest price for the season on a particular article has been reached, or advise them as to when it is a propitious time to buy. This is known as "protecting" the customer. We are all, however, apt to make mistakes at times, and occasionally it happens that the buyer is not protected, but at any rate he is on an equal footing with the merchant, and the odds are in his favor the greater number of times. On the other hand, giving orders to more than one firm creates a competition, and on the whole is a better plan, provided there be more than one firm available furnishing desirable products.

The lowest-priced article is not always the most economical purchase. For example, there is more economy in buying select apples at $5.00 per barrel than in buying an inferior quality at $4.00 or $4.25, which may, and probably does, contain enough wormy or decayed apples to make the price really equal that of the better grade, or in which the flavor of those that are "specked" may be so much less agreeable that they should be classed as inferior.

Buying from a jobber is like buying from a bargain counter. If one is sufficiently familiar with the article to be sure of his own judgment, a very good bargain may often be found, but promiscuous buying from a jobber is apt to result in one finding that in the end the original saving has been counteracted by the loss in spoiled or inferior goods received from time to time. Again, buying in "job lots" is apt to lead one into buying, at times, more than is really needed; then, in trying to use up the extra quantity, too frequent repetitions of that one food leads to dissatisfaction among the people to be fed, and often to creating an antipathy for that particular food, making it difficult to use it at a later time.

Even a more unsatisfactory condition than buying from a jobber is to have to buy from someone who has influence in the hospital—a trustee or a trustee's relative. In such a case, even the best buyer is utterly helpless, and after a few experiences will usually decide to take what is sent to the hospital from the favored house, and blindly O. K. the bills at the end of the month, with a feeling that he is bound and gagged and not strong enough even to struggle.

In some of the eastern markets the "unit system" is used. For example, a specified number of barrels of sugar constitute one unit, and a certain percentage of discount is given on the unit; no further discount is given, no matter if one buys ten times that number of barrels. In these markets, of course, there is no advantage in buying more than one unit at a time, except it might be to save the trouble of more frequent ordering.

With the limited facilities for storage in the average hospital, however, frequent ordering would be much less of a difficulty than caring for the larger quantity.

The demand for fresh fruits and vegetables in all seasons of the year makes it necessary for them to be

grown in unnatural conditions, ripened artificially, and some of them transported long distances. Most of our food material in the cities is handled by many different people before it reaches the consumer. All of these things may affect its condition or its desirability, more or less, and mean much to the person who is ill or has an impaired appetite or digestion. Unripe fruits or vegetables have a large percent of starch in a state which makes it difficult of digestion. On the other hand, if overripe—because of the sugars and moisture they contain—they furnish a good medium for the growth of molds and bacteria, which may form objectionable products.

Meats may be kept in very good condition for a reasonable length of time in cold storage, but, if kept long at a higher temperature when taken into the retail market, they deteriorate very rapidly. This is especially true of fish and poultry, and the same can be said of eggs. Though a buyer knows all of these essential things about his institution, markets, and food materials, he is not yet completely equipped until he knows what can and will happen to these food materials when cooked and served. The very best that the market affords may be purchased, and through improper cooking so much of the flavor and nutritive value be lost that it will be served as a tasteless, unattractive dish, from which the human body is able to assimilate very little, and which palls on the appetite and upsets the digestion.

Experience has shown that many of the people employed in the kitchens of hospitals are inclined to give very little thought to this important matter of using fresh or green food materials while still in their best condition; nor are many of them trained to cook things in such a way that the flavors are properly developed or retained, or that their greatest food value and digestibility are obtained.

To digress just a little, it may be said that the cooks are not altogether to blame for this. In employing a cook, the hospital will almost invariably ask for experience or ability to cook, rather than for knowledge of cooking—or perhaps it is better to say neglecting to ask for the knowledge as well as the experience. A cook who has had many years' experience began his career before food values or food composition were subjects for study, and because he has done a thing for twenty years, and it has passed muster, to him it is the proper way to do it, and his ability to cook is proportionate to the quantities of these things he has prepared during the twenty years.

The larger hotels and restaurants are paying their cooks more than are hospitals of corresponding size, and asking of them chiefly that they serve food highly seasoned—usually at the sacrifice of natural flavor—accompanied by rich sauces and elaborately garnished. But in which of these hotels or restaurants can one get a potato which is well cooked, yet dry and mealy, or a "boiled" egg that is evenly cooked and tender, or a vegetable that is not swimming in fat, or a salad that is really crisp? It is true that this very feature of hotels and restaurants does much to furnish patronage for the hospitals, but it is the business of the hospital to remedy it as far as possible.

What inducement, then, shall we offer in order to make it worth the while of our cooks to learn how food should be prepared in order to obtain the most of its nutritive value and at the same time not interfere with its digestibility? One step is to raise the status of the profession, and that would be a long and slow process; another and greater inducement will be to pay higher salary and thereby get competent people. At present it seems to be the part of the trained dietitian to accomplish what she can in the way of proper preparation and serving of food with, in many instances, not only inconvenient working

quarters and inadequate help, but often with an utter indifference of long standing, if not open opposition, not only in the kitchen, but from other departments as well.

In addition to the problems of buying, storing, and cooking of food materials comes the question of properly utilizing or distributing them. If meat is bought by the carcass, where shall the more nourishing cuts be used and where those cuts which have more delicate flavor? What shall be done with the cuts from parts of the animal most exercised, consequently with harder muscle, fiber, and connective tissue, yet with a good percent of nourishment? Fruits and vegetables are not always delivered in the most desirable condition. What shall be done with that which is overripe or too green for the purpose planned?

How are the left-overs to be utilized so as to be really economical? Often there is a small amount of meat, vegetable, fruit, or pudding remaining, though not enough to serve all who eat in one dining room or ward. Shall we have such a routine established that these cannot be served to the people for whom they were originally planned? Or shall they be eaten by the employees in the kitchen—perhaps in addition to their regular meal? Shall they be kept very religiously for a few days and then disposed of in some wasteful manner? A small quantity of material wasted here, a small amount not utilized there, may in a short time aggregate quite a large sum. Where shall we make "good solid food" the first thought and economize on time, and where shall we give more time to making daintiness and attractiveness the greater consideration?

The tendency on the part of the people employed in our kitchens has been to have a set of menus or dishes with which they were thoroughly familiar, and continue to use them indefinitely, thus giving institutional food its present reputation for sameness and unattractiveness. People

go into an institution holding this prejudice and with their minds made up to be critical, and in most hospitals they are not disappointed.

One who attempts to introduce variety into the diet and instill into the employees in the kitchen the proper attitude toward a judicious use of all food materials, at the same time instilling into the people being fed an attitude of respect rather than criticism, has a most prodigious task, one that will require much time and patience, but it is one worth while.

CHAPTER II.

FOOD VALUE OF CERTAIN PRODUCTS.

GENERAL PRINCIPLES OF CORRECT DIET—DEFINITION OF FOOD—FUNCTION IN THE BODY—COMPOSITION AND UTILIZATION—SOURCES OF FOOD.

Not only does food play a very important part in physical and mental efficiency, but it also furnishes one of the largest items in the expense account. Logically, this would make it one of the first considerations in the business of living, but, as a matter of fact, it is all too frequently one of the last, if it is given any consideration at all.

Nature has provided wisely for the human body, not only in supplying foods adapted to its various needs, but in providing facilities for utilizing the food. The extent to which we use or abuse this provision of nature has much to do with the lasting qualities of the physical mechanism. Among those of us who are well and strong, and wish to remain so, as well as among those who are handicapped by physical weakness, there is a more widespread interest in the quality and quantity of food. No doubt this is partly due to the emphasis many of our leading medical men are placing on the dietetic treatment of disease. For the reason that it is only in recent years that this has been given much attention, there are comparatively few facts or even well-established theories on its several phases, and we find almost as many opinions as we find advocates of scientific dietaries. But on one phase all are agreed—that more attention should be given to the nourishment and care of the body, keeping it fit all the time, rather than relying on drugs or other means of furnishing temporary stimulation.

So much is being written on the subject of food, food materials, and diets that one need have no difficulty in acquiring information. The bulletins issued by the United States Government at Washington, by the state experiment stations, and by the agricultural colleges are authentic, and may usually be obtained for the asking. The terminology may, however, be confusing to one not familiar with the usage of the different publications, as it is not uniform. The terms most frequently in use are food, food material, and food constituents. A generally accepted definition of food is anything which, when taken into the body, is capable of building or repairing tissue, or of furnishing material from which energy may be liberated, though, in order to be a real food, it must be palatable; and, if the best results are to be obtained, it must be easily digestible.

All foods contain carbon, hydrogen, and oxygen; proteins contain, in addition to these, nitrogen, sulphur, and sometimes phosphorus and other elements, this being their distinction from other food principles. Thus we have the classification, nitrogenous and nonnitrogenous foods; the nonnitrogenous include the carbohydrates and fats.

Carbohydrates include the sugars and starches, and, as the name implies, are made up of carbon, hydrogen, and oxygen, the latter two being in the same proportion as water—two atoms of hydrogen to one of oxygen (H_2O). Carbohydrate, with the exception of lactose and glycogen, is obtained chiefly from vegetables and fruits. Starch, the most complex form, is found in all green plants and is manufactured by chlorophyl and sunlight from the carbon dioxid in the air and from water in the soil. The starch grain is inclosed within a cell wall (cellulose)—often tough, as in rice and other cereals. When in this form it should be cooked long enough and at high

enough temperature to soften the intercellular tissue and reach the starch grain, making it more easily digested. When the starch grains are cooked, they swell and form a homogeneous paste; if cooked for some time, starch is more readily acted upon by the digestive juices (Bailey). The action of dry heat on starch produces dextrin. Familiar examples of this are found in the toasting of bread, browning of flour for gravies, etc. Many cereals are partially dextrinized, and on this ground the manufacturers claim for them that they are more easily digested than others.

But the body cannot use starch even in the form mentioned; it must be changed to dextrose, or simple sugars, before being available—in fact, all forms of carbohydrate must be changed to simple sugars before being absorbed by the body. There are many intermediate steps to this process, which begins in the mouth, with the action of the ptyalin producing the first change, and is ended in the intestines, where it is changed to its simplest form. Dextrose is found in natural form in fruit and plant juices, honey, raisins, and sweet corn in comparatively large amounts and in small amounts in many other vegetables. In the body, dextrose is produced by the action of some of the digestive juices upon the starch or sugar eaten. In cooking, a familiar illustration of the changing of sucrose to invert sugar is given in the addition of lemon juice or cream of tartar to cane sugar when making icing, fondants, etc., to prevent crystallization.

While dextrose is more easily and quickly assimilated, it ferments readily and surfeits quickly. Carbohydrates furnish energy, the waste being eliminated in the form of carbon dioxid and water through the breath, perspiration, and urine. Cellulose, though a carbohydrate, is of very little food value. Sherman mentions some studies of the utilization of cellulose which indicate that it may have a

very slight food value, though not enough to be considered for practical purposes. It is an important aid to digestion, as it furnishes the necessary "bulk" for stimulating the motions of the digestive tract and helps in preventing constipation. It should not be eaten in too large amounts, as it may ferment in the intestines and produce gases, which cause distention.

In fat the carbon, hydrogen, and oxygen are in a different proportion from that of carbohydrate. Fat has more carbon and hydrogen and less oxygen. Fat gives off more heat during its metabolism than carbohydrate—approximately two and one-quarter times as much. These two may be interchanged in the body as they are in diabetes, but not under normal conditions. Fat is digested in the intestines and ordinarily is practically all absorbed. When fat is heated to the "cracking point," it separates into fatty acids and glycerol. These fatty acids are the substances in fried foods which are irritating to the digestive tract. Olive oil has a high cracking point; butter, a low. From the standpoint of digestion, olive oil is a much more desirable form of fat to use for cooking purposes than butter, but its expense bars it from common use. There are, however, on the market many forms of fat that answer the purpose equally well, especially for deep fat frying and sauteing, the food value and digestibility being much the same, the chief difference being in the flavor. These are vegetable oils, and cottonseed oil is the principal ingredient in all of them. When not heated to the temperature at which decomposition takes place, butter is a most easily digested form of fat.

Fat is a concentrated form of food which is easily assimilated. It is, therefore, desirable in cases of tuberculosis, as well as in diabetes. Frequently patients object to taking much fat, and one must resort to various de-

vices for combining it with other food materials. The most convenient way of doing this is to use a great deal of butter or oil on vegetables, either cooked or in salads, or in salad dressings and sauces to be served with meats or vegetables. Dr. Langworthy and his coworkers have been making some experiments in the use of the cheaper forms of fat. They have found sea foods and also the marine algæ, such as Irish moss, to be some of the media for serving lard and the cheaper oils—such as suet, lard, and oils—in a way that disguises the taste fairly well. Cream may be used in liberal quantities, though it is a comparatively expensive form of fat.

As mentioned above, the nitrogenous foods are those which contain nitrogen and sulphur in addition to the other food elements. The common sources of animal protein are milk, eggs, and meat; of vegetable protein, legumes and cereals. Animal protein foods are concentrated and quite thoroughly digested. Meat has an agreeable flavor; milk and eggs have a mild flavor, which makes it not only possible to use them for a long time without palling on the appetite, but they may be successfully combined with other food materials. These foods contain, in addition to the protein, inorganic salts which are valuable. On the other hand, vegetable foods containing protein are bulky, as stated, and some of this bulk is desirable for the process of digestion. They give variety to the diet, and are a much less expensive form of protein food material. Accessory food substances, recently termed "vitamines," are found in cereals, legumes, and in the juices of meat. Just what these substances are is not known, though they have the power to stimulate metabolism, and seem necessary to certain functions. Gelatin is a form of derived protein very commonly used. Lusk says: "Gelatin is an artificial derivative of collagen, an albuminoid largely found in the skeletal structure of

animals. It contains very nearly the same amount of nitrogen as protein, and breaks up on chemical treatment into some of the amino acids. In the diabetic, gelatin yields the same amount of sugar as does protein; it does not build up new tissue, though it may diminish tissue waste." It is not our purpose, however, to discuss the numerous proteins found in food materials, their chemical dissimilarities, or their function in the body, except in a general way and in connection with the food in which they are found.

In cooking, proteins are coagulated by heat and toughened by a high temperature. For this reason meat, eggs, and milk should be cooked at a temperature below the boiling point. Recent experiments would seem to indicate that some of the "vitamines" are destroyed at higher temperatures. Proteins play an important part in the chemistry of nutrition, and are acted upon by pepsin in the gastric juice, being changed to proteoses and peptones. The pancreatic and intestinal juices change most of them still further, and they are absorbed by the body in the form of amino acids. Their function is to build tissue chiefly, though they may also furnish energy; the waste is eliminated in the form of urea, sulphates, and phosphates. The casein of milk is coagulated by rennin prior to further digestion, and this action will be mentioned more fully in the discussion of milk. The carbohydrates, fats, and proteins are the food principles obtained from organic food materials—those that are chemically changed and oxidized incidental to their utilization by the body.

Foods contain other food principles of an inorganic nature, many of which are taken into the body and assimilated without further change. These are mineral salts and water. They do not liberate heat, nor do all of them build tissue, though many of them help to do this, and

some are essential for body development. The mineral salts found in the ordinary diet are sufficient for ordinary use. If any are lacking, it is most apt to be iron and calcium. In a vegetable diet sodium chlorid (common salt) may be lacking, as vegetables contain little sodium salt in soluble form as compared with animal food. Many of the vegetables contain large amounts of alkalies. Often sodium chlorid is added for flavor only. Sodium and potassium help in the construction of blood cells and muscles. Calcium is necessary for the growth of bone and teeth. Milk and eggs are rich in calcium, and this is one reason why they are good foods for children.

Iron is necessary for the production of hemoglobin. The amount of iron salts present in vegetables depends on the soil in which they are grown, and the amount left in meats depends on the bleeding of the animal when killed. Green vegetables, especially spinach, are relatively rich in iron, and some cereals, beef, and egg yolk are other sources. Phosphorus and magnesium are other elements found in the body in large enough quantities to be mentioned. Phosphorus is furnished in the yolk of egg and in milk. Under normal conditions the requirements of the body for mineral salts will be met by the use of a mixed diet.

Drinking water usually contains mineral salts, and the character of those present is indicated by the hardness of the water. If these salts are in the form of carbonates, they may be precipitated by boiling and the water made soft; but if they are in the form of sulphates, it can be made "soft" only by the use of chemicals. So many of the processes of metabolism are due to hydrolysis that water is necessary in keeping the body well nourished, even if it contains no nutritive constituents. The average person requires from five to six pints of water daily, depending on his habits and the temperature of the atmosphere sur-

rounding him, though not all of this is furnished by actually drinking it. Considerable is present in foodstuffs and some is produced from the combustion of foodstuffs in the metabolism.

The food value of any material depends not alone on the percentage of food principles which it contains, important as they may be, but also on the amount of potential energy it yields, its digestibility, and its availability in the body. A food may yield excellent results in calories of energy, and yet be of little service to the body because it is difficult of digestion. Not the food we *eat,* but the food we *assimilate,* nourishes us. The portion of food assimilated by the body may differ greatly under different conditions. The body may be able to utilize more at one time than at another, and the freshness of the food, its appearance, and the manner in which it is cooked all have their effect.

CHAPTER III.

MILK AND ITS MODIFICATIONS.

COMPLETE FOOD FOR CHILDREN, BUT NOT FOR ADULTS—VALUE OF CREAM AND SKIMMED MILK—EFFECT OF PASTEURIZATION AND STERILIZATION—USE OF EIWEISS-MILCH, KOUMISS, AND CHEESE.

While milk may be a perfect food for a child, it is not ideal for the adult, as the needs of the young are not the same as those of an adult. The requirements of the young are more for the growth of tissue and bone than for the storing of fat or production of energy, and milk contains enough protein and mineral salts to meet these requirements. One quart of milk contains about the same amount of nutriment as 12 ounces of beef or 6 ounces of bread. Milk contains all of the food principles—carbohydrates in the form of lactose, fat in the form of cream, protein in the form of casein and albumin, and mineral salts and water. It is easily and completely absorbed, but, as there is no indigestible residue, a prolonged use of milk may lead to constipation or dyspepsia. Because it is deficient in iron, one constantly using milk alone may become anemic. Bread and milk, when eaten together, make a very good meal.

The composition of milk varies with the different breeds of cows and in different cows of the same breed. Jerseys and Alderneys produce rich, yellow milk, the cream rises rapidly and very completely, and almost all separates from the milk, leaving it thin and blue-looking; in the milk from Holsteins and Durhams the cream rises slowly and not at all completely, leaving a richer skimmed milk. Cream contains all the food principles, though they are in very small amounts except fat. The particles of

fat in cream are very finely divided, making it easy of digestion. Cream does not produce as much energy as butter, and it is a proportionately more expensive food. The use of cream as an accessory to so many of our present-day dishes is due to a habit, or a cultivated taste for rich things, rather than to a logical combination of materials.

Skimmed milk, or separator milk, contains the nitrogenous food principles, mineral salts, and sugar, but lacks fat if the separation has been effective. The value of skimmed milk is not generally appreciated, and it may well be used in cooking where fat is not needed or is furnished in some other form. The souring of milk does not usually affect its food value. Sour milk is produced by lactic acid-forming bacteria, and, when this acid is formed, the casein, which is insoluble in an acid medium, is precipitated, which precipitation continues until such a percentage of acid is formed that the bacillus acidi lactici will no longer act—in other words, when this degree of acidity is reached, the process of souring ceases. Other organisms may be present and produce other changes, though the acid medium has a tendency to check the growth of putrefactive microorganisms. When casein is precipitated by acid in the form of a curd, the change is a physical one, and the properties are the same as they were in the sweet milk. If an alkali is added, the curd will be redissolved, and sodium bicarbonate (common baking soda) is most often used for this purpose in cooking; but if the casein is precipitated by rennin, a chemical change takes place, and the properties are not the same, as a curd is formed that cannot readily be redissolved by an alkali. Rennin is the milk-coagulating enzyme of the stomach, and rennin prepared from the stomach of a calf furnishes the rennet or junket tablets on the market. When rennin acts upon the casein, a clot is formed, which

shrinks and squeezes out the whey and forms a mass the density of which depends on the amount of casein and mineral salts present and the acidity of the gastric juice. The normal, healthy digestive apparatus is equal to the task of handling this mass, and failure to do so indicates faulty digestion. This difficulty may be overcome by adding to the milk lime water, barley water, or even plain water to dilute the milk and lower the percentage of casein. Cracker or bread crumbs will separate the particles of casein and hinder the formation of a solid clot, another reason why bread and milk make a good combination, and sipping the milk slowly will also help. Souring of milk invariably takes place within a few days after being drawn from the cow, the length of time depending on the cleanliness of the milk and the temperature at which it is kept. Preventing this action by means of preservatives is no longer prevalent to any great extent, nor is the adulteration of milk with water practiced as formerly, since so much has been done by individuals and communities to improve the quality of milk sold.

If formaldehyd is added to the milk to preserve it, there may not be, as has been claimed, enough present to do any great harm to the person drinking the milk, but we infer that a dealer who must resort to this means is producing milk that is not clean or is contaminated in some respect. The formaldehyd destroys the lactic acid-forming bacteria, but may not inhibit the action of some other microorganisms which may be more harmful. Milk is a most excellent medium for the growth of microorganisms, as it furnishes the required food and moisture for their activity. For this reason milk should always be kept in clean vessels and at a low temperature; it should not be exposed in a room, particularly if there are many people moving about in the room, as is likely to be the case in kitchens of institutions; nor should it be left

uncovered. Milk will keep longer without souring if it is pasteurized. Pasteurization of milk consists in submitting it to a temperature of 140° to 160° F. for a period of about twenty minutes, the temperature varying with different dairies. This destroys many of the bacteria, including the lactic acid-forming, but not all. Pasteurization may not give us the product which we want, but it is at least safer than the same milk would be in a raw state. If, however, it is not properly cared for after pasteurization, it may be worse than if left raw, as the activity of the microorganisms which are not destroyed by the temperature of pasteurization, or which may get into it later, will not be checked.

Sterilization, submitting milk to a temperature of 212° F., kills practically all bacteria, and sterilized milk keeps longer, provided there is no further contamination. This high temperature destroys the emulsion of fat, and part of the calcium salts are made insoluble, so that the action of the rennet is interfered with, the taste is altered, and the casein is less easily digested. Milk is being produced by some dairymen who certify that it has been produced under the best possible hygienic conditions, which means that the cows are healthy and clean, the barns sanitary, and the milkers and all utensils coming in contact with the milk kept free from contamination. Some of our certified milk farms are models of cleanliness and care, and the milk contains comparatively few bacteria, but the milk is higher priced, and for this reason is not used except in special cases or by the well-to-do.

For infants, or others with very weak digestion, milk may be peptonized. Peptonizing tablets are made from an extract of pancreas containing proteolytic ferment, which acts upon the casein of the milk, making it noncoagulable. This may be done by either the cold or warm process, but for mouth feeding the process should not be

allowed to continue long enough for the milk to become bitter. When the proper degree of peptonizing has been reached, the milk should be put on ice to prevent any further action.

"Eiweissmilch" is found to be very beneficial for children who have certain types of digestive disturbances, particularly intestinal. This milk is obtained by precipitating the curd from milk by heating to a temperature of about 100° F. and adding rennin in the proportion of 2 tablespoonfuls to 1 quart of milk, allowing it to stand fifteen or twenty minutes, or using less rennin and allowing it to stand longer, keeping the temperature at about 100° F. until the casein is coagulated; then it is drained for about an hour in a sterile muslin bag. To the curd of 1 quart of milk add 1 pint of buttermilk; press through a fine sieve two or three times and beat vigorously. As it is difficult to get the curd fine enough to stay in suspension, care must be taken in warming the milk for use. This gives a milk rich in protein and fat, but poor in sugar.

Koumiss is another preparation of milk that is valuable in fevers or generally impaired digestion. Koumiss was originally made from the milk of mares that ran wild on the steppes of Russia. In this country cow's milk is used, and fermentation is carried out by kephir grains. Lactic acid and other fermentation take place, and the product is readily digested. Koumiss is expensive, but it has a large amount of nutritive constituents rendered easy of absorption. A so-called koumiss is made by fermenting milk with yeast, a very desirable substitute.

Lactose, or milk sugar—the carbohydrate of milk—is a particularly good food for infants and invalids because it is easily digested. It is not so sweet as cane sugar, and consequently does not pall on the appetite so quickly. It is readily acted upon by microorganisms, splitting up into

lactic acids. This action is highly desirable in some foods —buttermilk, for instance—but diarrhea or infantile summer troubles may occasionally be produced. Lactose is used in making pills and tablets, and is frequently furnished in the food of typhoid patients, in baby foods, and in many other cases where there is need to increase the caloric value of the food.

Other products of milk are cheese and butter. Cheese consists essentially of the casein and fat of milk, though the coagulated curd entangles in its meshes small portions of albumin, lactose, and mineral salts. The nature of cheese depends on the richness of the milk, kind of milk, and method of manufacturing. If pure whole milk is used and clotted with rennet, almost all the food value of the milk, except the lactose, is transferred to the cheese. This is the case in making Cheddar cheese; or, as in the making of Stilton, the proportion of fat is made greater by adding cream; or, in other cases, the cream is removed and a low percent of fat is left. This is sometimes done in making cottage cheese. The flavor depends on the varieties of bacteria and molds used during the ripening process, each species producing chemical changes which give characteristic flavors. The ripening process continues for weeks, and in some cases for months, the flavor slowly growing stronger and the cheese more palatable as time progresses. The soft cheeses—Camembert, Stilton, cream, Neufchatel, etc.—should be consumed soon after manufacture. Neufchatel and cream cheese are similar to cottage cheese, and may be eaten after one day of ripening. Cream cheese has more fat than the other two, but none of them is benefited by the curing process. Camembert is a French cheese which ripens in about thirty days, is kept in a cool place, and a mold develops during curing.

Edam is the most famous of the Holland cheeses. It

is made by using a pure culture of slimy bacteria. In Holland it is marketed in about a month, but when we get it in this country it may be several months old. Roquefort is made from goat's milk and ripened by a green mold, has a strongly marked flavor, and is very expensive. Parmesan and its variations, Gruyere and Gorgonzola, are also made from goat's milk. These are the so-called fancy cheeses, and the high price is paid for flavor rather than for food value. This is true of many of our foods, but is particularly likely to be the case with cheese.

American cheese contains more nutriment than Parmesan and at half the price. Stilton is about the same food value as American, but twice as expensive. Cheese eaten for flavor is an expensive food, but, if eaten for food value and the proper varieties are chosen, it is a decidedly inexpensive form of protein. Well-ripened cheese is not difficult to digest for the average healthy, normal digestion. Because of the large amount of fat, it may distress delicate digestive apparatus unless it is very finely divided, which may be done by grating, by thoroughly chewing, or by combining with milk or bread crumbs. Eggs and cheese make a combination of protein and fat in a rather concentrated form, and hence many people have difficulty in digesting Welsh rarebit, etc. Another reason for difficulty in digesting cheese dishes is that, as a rule, too much is eaten. Fatty acids are formed in small amounts during the process of ripening, and these may prove irritating and produce disagreeable effects.

Cheese should enter much more largely into the diet of well people in this country, as it is one of the most nutritious and satisfying foods we have. Europe, and indeed all the rest of the world, appreciates cheese more than we, and uses it as a regular and routine food.

CHAPTER IV.

BUTTER—ITS USES AND ITS SUBSTITUTES.

FOOD VALUE—AVAILABILITY AND PHYSICAL PROPERTIES—PROCESS OF RENOVATION—ANIMAL AND VEGETABLE FATS—OLEOMARGARINE OR BUTTERINE—SUET AND LARD—OLIVE OIL AND COTTONSEED OIL.

While cheese contains nearly all the nutritive constituents that may be obtained from milk, butter contains practically only the fat. Most of the laws or ordinances aimed to cover this subject require that milk shall contain not less than from 3 to 4 percent of fat, but this varies according to the breed of the cow, her care, condition, age, etc.

The fat may be separated from the milk by allowing it to stand in a cool place until the cream rises to the top because of its lower specific gravity. It is then skimmed off, or it may be removed much more completely by the use of a mechanical separator. The proportion of cream obtained depends on the method of separating, and the mechanical separator can be regulated to obtain any available content of fat desired, the average being 18 to 24 percent. A pint yields about 1,400 to 1,500 calories, and is a desirable form of fat to be used in the diet of the sick, for it is very easily digested. Dr. Hutchison says: "Good cream (45 percent) contains as much fat as a similar quantity of most cod liver oil emulsions and is usually much better borne."

Cream, however, is an expensive form of fat, and, when used by a healthy person with a normal digestion, is frequently taken either because of a habit of demanding cream with cereals, desserts, etc., or to gratify a craving for rich food, rather than for nutritive value. It is not

an uncommon thing for people to insist on cream, either plain or whipped, with a dessert otherwise as rich as should be eaten at the end of a heavy meal.

Devonshire or clotted cream is prepared by heating milk in deep pans in such a way that a rapid and very complete separation of fat is obtained. This form of cream contains as much as 60 percent fat and not more than half as much milk sugar as ordinary cream, for which reason it is particularly beneficial in the treatment of diabetes.

Butter may be obtained from either sweet or sour cream. That from sour cream has a flavor, due to growth of organisms during the ripening of the cream, which is characteristic of good butter. Naturally, butter made from sweet cream lacks this flavor, but is preferred by many, especially people of southern and central Europe. Butter without salt is also liked by these people, but neither the sweet nor the unsalted butter is as yet very commonly used in this country, except by the people who have come here from Europe. Salt is not ordinarily used in large enough quantities in butter to act as a preservative. The fact that sweet butter does not keep as well may be partially accounted for by the lack of bacterial action during the ripening and souring process. Considerable care is necessary to produce butter with an agreeable flavor. Most of our modern dairies produce a very uniform and excellent flavor by introducing pure cultures of the right kind of bacteria and controlling the ripening process. While the essential constituent of butter is fat, it also contains small quantities of milk sugar, salt, and casein. If butter is kept for any length of time, the casein undergoes fermentation, certain acids are formed, and the butter becomes rancid. Thorough washing removes much of these acids.

Carelessness in handling cream or butter is not infre-

quently practiced. In small dairies or rural communities, where a rigid inspection is not enforced, this is particularly apt to occur. As a result, a butter is produced which is too rancid to be put on the market until it is subjected to a process of renovation. For this renovation it is melted and the objectionable odors removed by blowing air through it, or by other methods of applying heat and washing it. The clear fat, which is now quite sweet, is drawn off, mixed with milk and churned again. The result of this is a product which is much improved. The degree of renovation depends on the character of the stock from which it was made, but renovated butter differs somewhat in composition from true butter and should not be sold as such. Tubs of what is claimed to be dairy butter are often renovated butter.

Butter fat, on decomposition, yields fatty acids which are soluble in water—butyric, caproic, and capric; and others which are not soluble in water, oleic being the most abundant. Butter fat contains 40 percent of olein.

The fat of the human body has a large percent of olein. Olein has a low melting point, and is therefore easily digested and absorbed. Taken in connection with other foods, butter is highly digestible and nutritious. Cooked butter, on the other hand, is more apt to disagree, owing to the fatty acids liberated by heat, which are irritating to the digestive tract. For an impaired digestion it should be spread on bread, or combined with some starchy material. Liquefied fats are sometimes administered to coat the stomach interior and prevent the action of corrosive poison. The effectiveness of this treatment is apt to be overestimated, as the membrane is already moistened with mucus, and it is difficult to ingest enough fat to coat the stomach sufficiently.

Oleomargarine, or butterine, is a substitute for butter, in which a part or all the butter fat has been replaced by

other animal fats, or a mixture of animal and vegetable fats. This combination of fats has properties similar to natural butter so far as the nutritive value is concerned, but in making this substitute the manufacturer, naturally, must look for fats and oils that are cheaper than butter, and that can be readily obtained.

Suet and lard have a higher percentage of stearin and palmitin, both of which have a higher melting point than olein. As stearin solidifies more quickly than the other fats, it is more easily removed, and the fats having a lower melting point are mixed with oils and varying quantities of butter to give the appearance of the natural article.

A perfectly wholesome and nutritious oleomargarine product has been obtained which is as easily and almost as completely absorbed as butter. While the best grades of butter have a finer flavor and are more easily assimilated than any substitute yet produced, a good grade of oleomargarine is more wholesome and palatable than a poor grade of butter. It is available for people who cannot afford the more expensive article, and it lacks the two properties in butter before mentioned which may be detrimental—namely, the free butyric acid, which is present in butter that is not fresh and which may be irritating to the digestive tract, and excess of casein, which may cause decomposition. There is no logical physiological reason for the rather widespread prejudice against the butter substitutes.

Olive oil and cottonseed oil are largely olein. The preference given to olive oil is due to its flavor. It is no more nutritious than some other oils and is much more expensive. Owing to the high price of olive oil, it is sometimes adulterated with cheaper oils, and 20 to 30 percent of adulteration may be used and not be distinguished. In the United States the adulterant is usually cotton-

seed oil, and in Europe it is more likely to be peanut or sesame oil.

Cottonseed oil is used in enormous quantities in this country, and much of it is utilized in food material of some sort. Since it will stand a higher temperature without smoking than lard or butter, it is used a great deal for frying purposes, and it is also used in salad oils. There are on the market combinations of cottonseed oil which have been chemically treated to make the "cracking point" higher. When the "cracking point" of a fat is reached, it decomposes into fatty acids and glycerol. A substance, acrolein, is formed which gives the odor to heated fat, and this substance may be responsible for the difficulty experienced by some people in digesting fried food, as it irritates the digestive tract.

CHAPTER V.

VEGETABLES IN THE DIETARY.

PHYSICAL AND PHYSIOLOGIC PROPERTIES—DIFFERENTIATION OF RAW AND COOKED VEGETABLES—CHARACTERISTICS OF POTATOES, BEETS, CARROTS, ONIONS, CABBAGE, CAULIFLOWER, ARTICHOKES, TOMATOES, ASPARAGUS, LETTUCE, CRESS, CELERY, CHICORY, AND ALLIGATOR PEARS.

Vegetables, cereals, and fruits furnish the necessary carbohydrates. The carbohydrate in vegetables and cereals is chiefly starch, and in fruits it is sugar. These food materials have very little fat, but are relatively rich in mineral salts, and, with the exception of the cereals, have enough water in their composition to aid quite materially in supplying the needs of the body in that respect.

All of these food materials are obtained from plants—in "vegetables," largely from the root, stem, or leaves; in cereals, from the seeds; and fruits are what the name implies. These plants are made up of innumerable cells, the walls of which are cellulose, inclosing the starch grains. The older the plant, the tougher this cellulose becomes, and the hardness of this cellulose fiber is an important factor in the palatability and digestibility of vegetables.

If the vegetable is young and tender, it is at its best when cooked only for a short time and in a small amount of water. By this method a minimum of the salts is dissolved out, the sogginess of overcooked food is avoided, and in green vegetables the natural color is retained. If the vegetable is older, it requires a longer cooking in a larger quantity of water in order to break up the intercellular tissue and allow the starch grains to be reached. Older vegetables are apt to have lost some of their origi-

nal water by evaporation, and it may be regained by this method of cooking.

The flavors also are affected by the method of cooking. Flavors are due to mineral salts and volatile substances. If not properly cared for, these may be dissolved out in the water during cooking and thrown away, or escape in the vapors. In the case of strong-flavored vegetables, such as onions, cabbage, and turnips, this is desirable; or, when vegetables have been stored for some time, a strong flavor may develop, which is preferred to be lost, and this loss may be caused to a still greater extent if the vessel in which they are cooked is left uncovered. In vegetables belonging to the cabbage family the strong flavor is due to the presence of sulphur compounds. During the cooking process disagreeable odors are given off, and for this reason many people object to cooking them in an uncovered vessel. If the vegetables are fresh, this may be overcome by putting a piece of charcoal in the water during cooking. On the other hand, chemical changes may take place when heat and moisture are applied for cooking, so that flavors and odors are developed, which is true of cereals and a few starchy vegetables.

So much of the palatability and digestibility of vegetables depends on their freshness and the method of cooking that a sweeping statement cannot be made to the effect that certain vegetables are beneficial in certain diseases or conditions and harmful in others. A vegetable which is crisp and tender and has been recently brought from the garden may differ very materially in composition from the article which is served after that vegetable has passed through the treatment of marketing, transportation, and cooking. A vegetable or fruit which must be shipped from its native place before ripening may not be used in some instances where a naturally ripened product could well be utilized. This is one of the points in

favor of canned vegetables and fruits if they are properly prepared.

Green vegetables are much used in a raw state for salads and relishes, but the starchy ones should be cooked before being eaten. Boiling or baking them cooks the starch, and to a small extent converts the starch into more soluble products.

Starch is a very stable substance, and vegetables with a high percent of starch may be kept in good condition for a long time, for which reason they may be had at any season of the year. Green vegetables are not so valuable from the standpoint of nourishment as the starchy ones, but they are nevertheless very valuable in the diet. They contain an abundance of mineral salts, which are very essential in metabolism. They furnish "bulk," which aids digestion, and, when fresh, they are appetizing and stimulate the flow of the gastric and saliva secretions. This is especially true of those which have a pungent quality, such as cress, mint, peppers, etc., and some of them are antiscorbutic in action. They are easily digested and give pleasing variety to the diet. Their food value is enhanced by being served with butter or cream sauce if cooked, and by use of salad dressings or oil if served as a salad. The potato is a staple article of diet because it is inexpensive, has fairly high nutritive value, and may be obtained in almost all parts of the country. If properly cooked, it is easily digested; baking or boiling with the skin on prevents the mineral salts from being dissolved out. If cooked with the skins on, potatoes should be pricked and the skin broken to allow the steam to escape if they have to be kept for a time or carried some distance before serving, as is apt to be the case in a hospital. If this is not done, as the potato cools the steam condenses around the starch grain, making it soggy. Overcooking or keeping in a covered vessel after cooking will have the same effect.

Potatoes are a bulky food, and should be used judiciously. New potatoes, like unripe fruit, have undesirable substances and should not be eaten by children or people with impaired digestion; old potatoes, particularly if they are allowed to sprout, have some of the starch changed and become waxy.

Beets and carrots are other vegetables with a high percent of carbohydrate. They contain sugar as well as starch. When young, they are much more nutritious and readily digested than after the cellulose has toughened. Both have a characteristic flavor, and are desirable for salads or relishes as well as vegetables. Adding vinegar and other acid to beets softens the fiber. The leaves of the young beet are used for greens.

Onions and all vegetables belonging to the cabbage family are wholesome, but not especially nutritious. They contain mineral salts, some sugar, and much fiber. The strong flavor of onions is due to volatile oils, much of which may be lost in the cooking. They are utilized in soups, salads, etc., for their distinctive flavor. The Spanish and Bermuda onions have a milder flavor than the others, and consequently are better liked as vegetables.

All "head" vegetables—cabbage, lettuce, cauliflower, artichokes—should be well washed and placed "head down" in a pan of water to which salt or vinegar has been added, in order to draw out any insects which may be hidden among the leaves. Thompson, in his "Food and Dietetics," says all foods should be well washed, not only for the purpose of removing dirt, but because of possibility of contamination from the water with which they may have been irrigated or treated for pests, or from fertilizer in the soil, and because the larvæ of the tapeworm and roundworm may adhere to their surface.

Tomatoes are in great favor as a food material because they may be served in so many ways, both cooked and

raw—as soups, vegetables, salads, relishes, etc.—and because they contain organic acids, which make them appetizing. Tomatoes and cabbage, when not properly cooked, may cause difficulties of digestion.

Asparagus and artichokes are prized for their delicate flavor. Like all flavor foods, their nutritive value is not very great, and therefore, from the standpoint of nutrition, they are expensive food materials. The form of carbohydrate in artichokes is inulin, and, as this is not changed to sugar in digestion, they may be given to diabetic patients. Asparagus contains a substance known as asparagin, and also contains a relatively high percent of purins, which is excreted by the kidneys in the form of uric acid, having a slight diuretic effect. Lettuce and cress are chiefly cellulose and water, with very small amounts of protein, sugar, acids, and salts, which give them an aromatic flavor. For this reason they are liked as appetizers and to give variety as well as bulk to the diet. In this same class may be placed celery and chicory, which, when blanched so that they are crisp and tender, can be served as relishes. Celery seed has a slight medicinal value, and celery salt furnishes a pleasant flavor for soups, sauces, stuffings, etc. The roots of the chicory are sometimes substituted for coffee, or used as an adulterant of that article.

CHAPTER VI.

CEREALS, LEGUMES, AND BREAKFAST FOODS.

CORN, OATS, WHEAT, AND RICE THE PRINCIPAL GRAINS USED —TAPIOCA, SAGO, AND ARROWROOT—THE PLACE OF LEGUMES IN THE DIETARY—SOME OF THE PREPARATIONS AND THEIR FOOD VALUES.

In cereals and legumes all of the nutritive constituents are represented, though the fat is very low, and mineral salts not so abundant as in green vegetables. The proteins and carbohydrates occur in large enough amounts to make them very valuable as food material. The protein differs somewhat in different cereals, but the food value is much the same. They have other nitrogenous substances known as amides, which also vary, but are more abundant in the growing plant than in the seeds.

Corn and oats have slightly more fat than the other cereals. Cornmeal is rich in fat if the germ is left in the meal, though it becomes rancid much more quickly. It has less nitrogen than the other cereals, and the refined product has lost much of its food value. In hominy the hull is removed and the germ remains. Though hominy is not a popular cereal, it is valuable from the standpoint of nutrition.

Both corn and oat cereals are popularly regarded as "heating" foods because of the abundance of starch and fat present. Oats are either rolled or cracked. The manufacturers claim that oats which have been steam cooked and crushed between rollers require less cooking; but these claims regarding cereals are misleading, as the cereals have usually not been sufficiently cooked. All cereals require long cooking in order to break down the intercellular tissue of the hard envelope which incloses

the starch grain and makes the grain itself more soluble. A cereal containing the whole grain requires more cooking than one made from only a minor part of the grain. Much water is absorbed during the cooking of cereals, which should be a slow process; cooking overnight in a fireless cooker, or in a steam kettle at a very low pressure, is the best way to thoroughly cook the cereal and develop the flavor.

Wheat is the most widely used cereal. It is ground and part of the outside removed in making ground cereals. It is rolled and the whole grain is used in making "rolled" cereals; dextrinized, and with malt or honey added, a "prepared" cereal is made from it; ground and bolted, it is made into flour of various grades, according to the process of manufacture, ranging from "patent" to graham. "Whole wheat" flour is a misnomer, as the outer covering is removed in making this flour. There are gluten flours on the market for which the claim is made that they have all or nearly all of the starch removed, but this claim is not to be relied on. After tests made of every brand of gluten flour obtainable, it was found that none was safe to give to a diabetic patient, and these conclusions were confirmed by subsequent tests made at the University of Chicago.

Much of the so-called graham flour on the market is a mixture of an inferior grade of flour and bran, though there is still some of the real graham flour to be had, which is made by grinding the whole kernel without bolting. Unless the mixture is labeled as such, the consumer has no way of distinguishing the real graham flour from the imitation, as it can be detected only by microscopic and chemical analysis.

One of the large packing houses has succeeded in producing an animal flour from "cracklings." The use of the flour has not been developed to any extent as yet, but

when mixed with wheat flour a very palatable bread has been made. A sample of this bread was shown by W. B. Albright at the American Meat Packers' Convention which was held in Cincinnati in October, 1916. Mr. Albright said animal flour made from cracklings could be readily used to increase the nutritive value of many varieties of food. It would be easily absorbed in soups or in bread. Another use to be recommended is in pure pork sausage. This flour can be easily produced with an average content of 87 percent protein and 6 percent fat.

Macaroni, spaghetti, and noodles are made from the harder varieties of wheat. They are rich in carbohydrates and proteins, and are almost completely absorbed in the body. The nutritive value of plain macaroni is just about the same as that of good wheat bread, provided the moisture content is the same, and it is less of a tax on the alimentary organs to digest macaroni than it is to digest the majority of bakery breads. Some factories are putting out a form of spaghetti or noodles suitable for use as a cereal. On the whole, these are food materials that might well be used much more than they are by the American people. When combined with cheese, bacon, or milk, they make a most nutritious and economical food.

Barley is another cereal of great use in certain diets, especially for children. At the present time barley is not used as much as it should be, but in children's hospitals and in the children's departments of the more progressive large general hospitals barley water, barley gruel, and barley jelly are standard forms. As soon as the manufacturers of commercial barley forms begin to study the needs of the medical profession and to cater to those needs, undoubtedly barley will find far wider use for adults, sick and well.

Rice is widely used for people with weak digestion,

though it is not particularly easy of digestion. The cooking of it is a most important factor with regard to its palatability and digestibility. It is very well absorbed, however, and is so low in fat that no difficulty occurs from that source. Unpolished rice is gaining in favor. That from which all of the covering of the grain has not been removed has a "nutty" flavor which is pleasing. After cooking, it has a grayish color, and patients not familiar with this kind of rice have felt suspicious of it because of this color. Since its introduction at Lakeside Hospital, Cleveland, the unpolished rice is in greater favor than the polished. Unpolished rice can now be had in bulk at a price which hospitals can afford to pay.

There are on the market a number of so-called "prepared" breakfast foods which are palatable and nutritious, but expensive as compared with other kinds. Their manufacturers claim for them that they are cooked and predigested by malt or other preparations, but, as a matter of fact, they do not have enough malt to sufficiently digest them, nor is the dextrinization extensive in these "predigested" brands. Even if the digestion were complete, it would be no advantage to the healthy individual to have his food digested outside of his body and thus deprive the digestive organs of the stimulus of the work. Only a much impaired digestive tract could be benefited by it.

Other carbohydrates which are of high food value, easily digested, and well absorbed are tapioca, sago, and arrowroot. As a rule, these are combined with milk, egg, or fruit juices, which add to their desirability both as food and for the flavor.

Legumes have a higher percent of protein than cereals, but they are less completely digested, and the flavor is not so popular as a rule. As a source of protein they rank next to meat and eggs in importance, and are much

used by vegetarians. Fresh green peas and beans are easily digested, but when old they are difficult to digest unless cooked a long time. Dried legumes are tough, and should be soaked for several hours before cooking. It is said that legumin and certain mineral salts form an insoluble compound which cannot be made soft, which means that peas and beans should not be soaked or cooked in water that is very hard; this may be overcome by adding sodium bicarbonate (plain baking soda) to the water. If cooked with pork or fat beef, their food value is very much increased and the combination is more palatable.

Kidney beans are more popular with people who do hard, physical labor. Lima beans are very wholesome, and are more popular with those who have less hardy appetites. Soy beans are used much in the Orient, but are not fully appreciated here. Soy bean flour is used in this country in preparations for infant feeding and also to some extent in foods for the diabetic.

Another legume not properly appreciated is the peanut. It has both fat and protein in large percentage, an agreeable flavor, and may be utilized in many ways. During the roasting process, which is the method of cooking peanuts, the flavor is developed and the starch cooked, and they are an extremely well-balanced food.

Meal made from peas and beans may be had at a moderate cost, and is very good for thickening soups, making gruels, etc., though a puree of vegetables is better for cream soups. Often when the digestive organs are not equal to the task of disposing of vegetables and cereals which are served in the ordinary way, strained cereals or vegetables may be used.

Gruels, purees, and cream soups are very nourishing, and logically follow the milk and broth diet when a patient is able to utilize them and the "building up" process begins. Another advantage is the variety of ways in which they

may be served, which leaves no excuse for a monotonous diet when this stage is reached. Gruels prepared from thoroughly cooked oatmeal, served plain at one time, with cream at another, a well-beaten egg at another, and with beef tea or beef juice at another, make a goodly number of changes. These may be followed by rice or farina gruel with the same variations, and with fruit juices or sherry in addition. Prune juice is especially good with these gruels. These, together with broths, custards, and gelatin, give a wide enough range to prevent frequent repetitions, and can be managed even in large hospitals if there is the proper cooperation between the medical men and the kitchen.

CHAPTER VII.

FRUITS—COOKED, RAW, CANNED, AND DRIED.

APPLES, GRAPES, PLUMS—CRANBERRIES—PRUNES, FIGS—LEMONS, ORANGES—PINEAPPLES, BANANAS—PEARS—MELONS—ADVANTAGE OF CANNED FRUITS—THE PLACE OF FRUITS IN THE HOSPITAL DIETARY.

Fruits are held by some people to be a luxury rather than essential foods. To be of dietetic value does not necessarily mean that a food must build tissue or furnish energy. The sugars in fruit do furnish some energy, but fruits perform other functions equally important. They introduce into the system salts and organic acids, which may improve the quality of the blood and react favorably on the secretions; they serve as laxatives and antiscorbutics; they are refreshing, stimulate the appetite, and convey water into the body; they add a pleasing variety to the diet—not to mention their usefulness as a foundation for special cures and fads, such as the grape treatment, etc. Commercially, the delicious flavors of fruits are produced by compounds known as ethers, in combination with the sugars dissolved in water, and the acids. There is little starch in ripe fruit. The acids are quite similar to each other, and most of them are organic, the three most common being citric in lemons and oranges, tartaric in grapes, and malic in apples. These are typical acids, though most fruits have several kinds. Citric and tartaric acids are separated from fruit and used commercially for many purposes. Cranberries and prunes contain benzoic acid. Pectin and pectose are forms of carbohydrate in fruits, and are the properties which cause the juice to "jelly" when boiled in the presence of the acids and sugar of the juice. Apples, grapes, and

plums have a comparatively large percent of pectin and pectose, and are consequently more easily made into jelly than berries and many other small fruits.

A judicious use of fruit in the diet is very beneficial, the great danger being in the use of unripe or decayed fruit. Cooked fruit is safer than the uncooked, especially if overripe or not properly ripened; the starch which may be present in green fruit is more easily assimilated if cooked. In overripe fruits bacterial action may have begun which will be checked by cooking. Chemical changes occur in the presence of heat, which give different flavors.

Fresh fruits are well adapted to our needs in summer on account of their low caloric content as well as for reasons given above. Lemons and oranges are generally available, and they are agreeable to nearly everyone, qualities which make them most useful for the sick room. They may be used to encourage the consumption of water in renal disorders, or in any condition where much water is required. Made into ices and sherbets, they are less likely to disagree than ice cream, and are very refreshing to patients with high temperature. A slice of lemon in the mouth will remove the disagreeable taste due to a coated tongue. Lemons and limes are valuable antiscorbutics. Pure lemon juice poured into the nose may often control epistaxis. Figs, prunes, apples, and berries have enough sugar to make them of high food value, and their seeds, skins, and fiber make them helpful as laxatives. Pineapple is not only appetizing and refreshing, but contains when uncooked an enzyme which aids in the digestion of protein. A common proof of the action of this enzyme is found in the rapidity with which it digests gelatin, a proof that many a cook has had when trying to prepare a gelatin dessert with raw pineapple. With the exception of oranges and lemons, no other fruit is so

beneficial in the diet of the sick as pineapple. Some of our eastern physicians are finding pineapple juice very effective in cases of anorexia, and it is a rather unusual thing to find a patient in a hospital who will not enjoy preparations of pineapple if he can enjoy any food at all. Bananas and pears are much more easily digested if cooked, particularly if baked; they are more readily broken up by the digestive juices, and flavors are developed which change the original taste very much.

Alligator pears—avacado—are rapidly coming into favor, and they deserve to become popular. They have a large percent of easily digested vegetable oil, which makes them particularly desirable for diabetics. When ripe, the flesh is of a greenish-yellow color, and its consistency has been well compared to that of well-made butter.

Another fruit which is being introduced into the United States is the roselle. This plant has been cultivated in Australia, where the fruit is made into jam. This jam is an excellent substitute for cranberry sauce. A very good jelly may also be made from the plant.

Mastication plays an important role in the digestion of fruits. Bananas, melons, grapes, and blueberries are apt to slip down the throat whole or before being finely chewed, thereby putting too much of a tax on the digestive organs.

Fruits are preserved by means of cold storage, and may be kept in excellent condition, provided the temperature does not go below freezing. Preservation by drying is an inexpensive way of keeping fruit, and does not affect the food value to any extent, except in the loss of water, which is remedied by soaking the fruit before cooking for a sufficient length of time to allow the reabsorption of an amount of water equivalent to that which was evaporated in the drying process. As the drying process requires a

great many hours, the soaking process should also be allowed to go on for several hours. In the commercially dried fruits sulphurous acid is used as a preservative and to prevent discoloration, as the fresh fruit is exposed to the sulphur fumes before drying. Some of the sulphurous acid escapes with the moisture, but enough remains on the fruit to have called forth a protest. There is probably not enough of the sulphur compound remaining to harm a healthy, normal person, but there is possibility of a weak digestive tract being affected by it. Here again the method of cooking is an important factor in the palatability and digestibility. If dried fruit is thoroughly washed, sufficiently soaked, and not overcooked, it may be made very appetizing, and is available for those who cannot afford the fresh fruit. Canned fruit has as much in its favor as any cooked fruit. Since our canning factories are being managed on such efficient and sanitary plans, there may be some advantages in using fruit or vegetables which are canned in the same section of the country in which they are grown. They may ripen before being gathered and are not subject to the deterioration due to transportation, standing in open markets, and much handling, which fruit is apt to receive before reaching the consumer unless it is grown in the vicinity. Canners have better facilities for sterilization and for keeping their fruits and vegetables whole and in good condition than private homes can possibly have. They get the product when it is in the best condition for canning, and their scientific investigations in their own laboratories have taught them the exact temperatures that are best for each material, how to gauge density of syrups, and all other important points in preservation by canning.

Fruits and vegetables put on the market today by

the better manufacturers are as wholesome as the home article, and perhaps have been selected with more care than some of our home products.

It is quite essential, however, that we learn manufacturers and their grades. We may know the numbers indicating certain sizes of cans and observe the net weight written upon the can, but we cannot in this way know whether we are paying for water or for fruit in the can. It is well to find a reliable brand and use it as much as possible. The price is not a safe guide either, as often a higher priced can will contain more liquid than one with a lower price.

CHAPTER VIII.

COFFEE, TEA, COCOA, AND CHOCOLATE.

COFFEE AND TEA HAVE PRACTICALLY NO NUTRITIVE VALUE, AND ARE MERELY STIMULANTS—COCOA AND CHOCOLATE ARE EXCELLENT FOODS, BUT SOME ADULTERANTS ARE HARMFUL—CEREAL "COFFEES" AND THEIR USE.

Cocoa beans contain about 50 percent fat, and the greater part of it is removed in making cocoa. Cocoa fat is solid at ordinary temperature, and is known as cocoa butter. It more nearly resembles butter fat than any other natural fat on the market. It is not employed so much in cooking, but is used a great deal in making chocolate bars and coating chocolate candy, and is in considerable demand for medical and pharmaceutical preparations.

Both protein and carbohydrate are found in tea and coffee in very small quantities, but in forms which are not soluble, and therefore cannot be utilized by the body. Neither is a food, but cocoa and chocolate contain nutrients which the body can use. Coffee, tea, cocoa, and chocolate are stimulants, though their properties for stimulating are not equal. Many adults do not notice any stimulation from cocoa or chocolate, and it is more apt to be noticeable in children, especially if they are taken in concentrated forms or in large quantities.

The stimulating property in tea and coffee is due to caffein, and in chocolate it is theobromin. Tannin, a substance in tea and coffee, interferes with the action of the digestive juices, and more particularly with the digestion of protein. In tea the amount of tannic acid increases with the time of infusion, and the liquid should be allowed to stand on the leaves but a very short time. The

use of the tea ball permits of the desirable properties being dissolved and the leaves being removed before the tannin, which dissolves much more slowly, has become a part of the tea. A most delicate infusion may also be obtained with the samovar. In black tea some of the tannic acid is made less soluble by a process of fermentation. This makes it less astringent than green tea, and there is present a little more of the oil, which gives a flavor that is considered better by many people. The difference in grades of tea is due to the difference in location on the plant from which the leaves have been taken. The small leaves at the tip end of young shoots are the choicest, while those larger and farther down on the plant are of an inferior grade. Teas from different countries have different flavors, and a blend of several varieties gives a better flavor and is more pungent. The use of milk or cream in tea is objected to by connoisseurs; there is logic, however, in the use of orange, lemon, and other fruits if the brewing is done in a pot. The acid of the fruit somewhat modifies the tannic acid, though one does not get the natural tea flavor as completely when it is mixed with the flavor of the fruit.

The tannin in coffee is combined with caffein, and is found in smaller proportion than in tea; but so much more coffee is used per cup, however, that the result is much the same. During roasting the aroma of coffee is developed and some of the acids are driven off. Mocha, Java, and Rio are the commoner brands of coffee. Mocha produces a delicate, clear concoction; Java, a strong one; combined, they are a very good blend. The caffein is dissolved almost immediately, and the value of the percolator in making coffee is similar to that of the tea ball in making tea. Coffee is sometimes adulterated with chicory. One should not have to pay coffee prices for chicory, but it is a harmless adulterant, and gives a distinctive

flavor which is popular in many European countries and in our own southern states. Café au lait, used much by the French especially, is made by combining a strong coffee, often with the chicory in it, with hot milk. The proportion of milk used is much larger than that of cream ordinarily used, and, though the coffee is very strong, it is diluted to such an extent by the greater amount of milk that it probably has no more caffein than is in coffee made in the customary way. The use of cream in tea and coffee is condemned by some authorities on the ground that the tannic acid is precipitated by the cream, forming a hard precipitate, which is irritating and indigestible. Other equally eminent authorities say it is better to have this harmful substance made insoluble, so that it may not be absorbed by the body. Individuals are apt to be advocates of whichever theory accords with their tastes. A moderate amount of black coffee excites the flow of the digestive juices, thus giving it the nature of an appetizer in some instances; or a demitasse at the end of a heavy meal may have value as an aid to the heavily taxed digestive organs. Taken in large amounts, tea and coffee are apt to be overstimulating, and are really nerve irritants to neurasthenic patients. If used in excess, coffee may be constipating; on the other hand, if taken in moderation, it may serve as a means of helping to get more water into the system than would otherwise be taken. To the average healthy individual, leading a comparatively active life, there is little harm in the use of coffee if not used to excess.

There are many cereal "coffees" on the market whose manufacturers claim much for them. As their name implies, they are made of some cereal or combination of cereals which have been parched and ground. It is true that they are not constipating nor overstimulating, nor in any other way harmful; neither have they any great

virtue, as they have no nutritive value of any consequence. For one who is harmed by the use of tea or coffee, and yet does not care for plain water, these substitutes may induce him to take more liquid than he otherwise would.

Cocoa and chocolate have stimulating properties due to the theobromin present, but they also contain fat, protein, and carbohydrate in large enough proportions to make them of value as food materials, and, with the addition of milk, they have considerable nutritive value. They are made from the beans of the cacao tree. These beans, which are similar in size and shape to almonds, are separated from the long pod and fermented for a few days in order to modify the bitter taste; they are dried in the sun and roasted to develop the odor and flavor and give them the reddish-brown color, after which the hulls are removed and the kernels crushed. The hulls have been largely used as an adulterant for spices or in making a cheap grade of cocoa, and they have some value as cattle food. The kernel is ground to a powder, and, if cocoa is desired, most of the fat is removed, the amount remaining in the cocoa varying with different brands. One who has an intimate and accurate knowledge of the manufacture of cocoa says this of the process: "In the manufacture of cocoa by the so-called 'Dutch process' the ground mass is treated with a caustic alkali or its carbonate. By this treatment a part of the oil of the cocoa is converted into a sort of soap, and the insoluble particles remain longer in suspension; but this addition of a foreign substance destroys the fine bright-red color of a natural cocoa and impairs its flavor to such an extent that it is always necessary to add an artificial flavoring matter to make it palatable." In speaking of the use of the hydrate or carbonate of sodium and potassium in making cocoa, he makes this statement: "This employment is due to the fact that by their use a lower grade of

cocoa beans can be used than in the manufacture of a cocoa having no chemicals." It has been said that these alkalies are not harmful, but there is some question about that, particularly if the beverage is used frequently. Cocoa may be adulterated with ground hulls, starch, or by having more fat removed than should be, as cocoa butter is a high-priced article. Because of the starch present, it should be cooked long enough to soften the starch grain, and putting cocoa into a cup and pouring hot liquid over it will not cook it sufficiently. The "whitish" coating sometimes found on chocolate does not necessarily mean that it is old or of an inferior quality. Pure chocolate will melt at a temperature of about 96° F.; part of the oil or butter will rise to the surface. If a cake of chocolate has become warm enough to start melting, then again become cool, this cocoa butter will cover the outside of the cake, giving it the white appearance.

If little or none of the fat is removed when the bean is ground, chocolate is produced. Many people cannot assimilate so large a proportion of fat, and therefore chocolate is better when used with some other material, such as sugar. Even sugar added in candymaking gives a better product than the chocolate alone. Chocolate is often subject to considerable adulteration. Cheaper fats, such as beef stearin, may take the place of cocoa butter. Seeds may be ground up with the cocoa bean, and even an imitation chocolate has been made from gelatin, sugar, iron oxid, and aniline dye, with a coating of shellac varnish to give the gloss of the chocolate fat. Theobromin is milder in its effects than thein or caffein, but chocolate containing it should not be given to young children in candy or other concentrated forms, especially if they are nervous and excitable.

CHAPTER IX.

POULTRY AS A HOSPITAL FOOD.

ALL FOWLS HAVE THE SAME FOOD VALUES, THOUGH GEESE AND DUCKS HAVE TOO MUCH FAT FOR IMPAIRED DIGESTION—LITTLE DIFFERENCE BETWEEN WHITE AND DARK MEAT—VALUE OF PROPER COOKING.

Poultry furnishes another food material which is much used in the hospital dietary. All domestic fowls are similar so far as food value is concerned. Conditions which influence the flavor and quality of poultry as food are age and sex, food and care, killing and plucking, storage, dressing, stuffing, and cooking. Almost any breed may be made acceptable for eating with the proper care and feeding, though the larger fowls are considered better than the smaller. The young fowl is more tender and more delicately flavored than one which is older; more growth and exercise have made the fibers of the older fowl tougher, but more extractives have developed, which gives a stronger flavor. This is why the flavor of wild game is so pronounced. The flesh of young fowls which have been well fed and cared for is more desirable than that from the neglected fowl, the flesh of which will be tough and stringy. Capons and milk-fed chickens grow to be larger than the common fowls, and their flesh is whiter and more delicately flavored. They are usually confined in a small area, and so much care is given to them to make their flesh of the highest quality that they bring a much higher price on the market.

In buying poultry, one should look to the following points for good quality: (1) a well-rounded form, with no bony angles, particularly on the breast; (2) a clear skin, free from yellow blotches—these blotches are indi-

cations of long storage—other indications of long storage are a leathery skin and soft muscles, easily torn; (3) in a young fowl the breast bone is still cartilage, being soft and flexible, and the feet are soft and smooth—not hard and rough; (4) in ducks and geese the windpipe is flexible in a young fowl; (5) in squabs the flesh is whitish and the feet red, and in the older bird the flesh is purplish.

The Yearbook issued by the Agricultural Department says that, so long as poultry is frozen solid, no harm is done by storage. At the meeting of the packers and cold storage men in Chicago in 1914, meats and poultry were served that had been in storage for a much longer time than is usually considered acceptable, and yet the fine flavors persisted. No doubt much of the criticism of cold storage is due to the manner of thawing and handling after the poultry is removed from storage. The practice of thawing by dipping the fowls in tanks of water has been most repulsive in some instances, especially where the water in the tank was not renewed as frequently as it should have been, and poultry which was in good condition when taken out of storage would be pretty well contaminated after coming out of the tank. It is difficult for the dealer to sell frozen chickens to retail buyers, as few realize that the frozen fowl may be really safer than one which has been thawed, and the fact that it is not frozen is no indication that it has not been in storage. After being taken from the extremely low temperature into the higher one in the market, it deteriorates very rapidly.

Ducks and geese have so much fat that they are very little used in the hospital dietary. Squabs and quails, etc., can be used only in hospitals where patrons are well to do, but chicken is used almost daily for all classes of patients and in all hospitals.

The difference in food value of dark and light meat is

a negligible quantity. There is a lesser amount of fat in the light meat, but there is not enough in the dark meat to be given any consideration dietetically. The dark meat may have very slightly more extractives, and consequently may be more highly flavored. There was formerly a prejudice in favor of using white meat for a patient when he was beginning to eat his first solid food, and forbidding the dark, but the only reason, however, for this is that the white meat is more tender and more easily masticated.

Cooking plays as important a part in the desirability and digestibility of chicken as any other factor. What may be said of the cooking of chicken may be said of all meat—if any microorganisms are present, they are killed by the cooking process; flavors are developed which completely alter the taste; the fibers and intercellular tissues are softened and made more easily digested. Cooking meat too long, or at too high a temperature, will dry up the juices, making it tasteless, and toughens the fibers so that they are not readily broken down by the digestive juices.

CHAPTER X.

EGGS AS A STAPLE ARTICLE OF DIET.

VALUE DUE TO LARGE AMOUNT OF NUTRITION—MILDNESS OF FLAVOR FACILITATES THEIR USE IN COMBINATION WITH OTHER FOODS—FRESH EGGS—CAUSES AND CURE OF RANCIDITY—EGG DISHES.

It has been said that eggs are as indispensable in cooking as the word "the" is in conversation. This may be attributed to the fact that eggs are of high nutritive value, are easily digested, very well absorbed, and have a mild flavor which makes it possible to combine them with a great variety of other food materials. They may be used in omelets, cake, etc., as a leavening agent; in custards and sauces for thickening purposes; and for adhesive purposes in croquettes, cutlets, etc. Their value as a food depends a great deal on their freshness and the manner in which they are cooked. Perfectly fresh eggs are liked by almost everyone, but, if kept at ordinary room temperature, the flavor soon deteriorates. As the shells are porous, their contents may be quickly contaminated, and therefore eggs should not be kept near anything which has a strong or disagreeable odor, nor should they be packed in any material which has a disagreeable odor.

Eggs kept for a considerable time in a warm room will have alkaline substances produced—presumably from the white. If air does not reach the inside, and if they are kept at a low temperature, this chemical action takes place more slowly. Many devices are used to prevent the loss of water by evaporation and the passing of air into the egg; coating the outside of the shell with petroleum is probably the most effective means, but it is likewise the most expensive and requires too much time to be prac-

tical. Eggs may be preserved in a solution of lime water or in salt water, but these penetrate the shell, and after a time affect the taste of the egg. Sodium silicate (water glass) has proved to be very satisfactory in preserving eggs. By this means eggs may be kept several months with very little, if any, change in the flavor. The yolk retains its normal position, and the eggs are more nearly like fresh ones than if preserved in any other of the ordinary ways. The shells of eggs so kept crack very easily, necessitating careful handling, and the eggs must be used very soon after being removed from the solution.

Storage at a temperature of 32° to 34° F. in a clean, pure atmosphere will arrest bacterial development in eggs, and there will be comparatively little change in four or five months, though after that the change is more or less pronounced, according to the method of storage and length of time kept, and, if not turned frequently, the yolk adheres to one side. The amount of moisture in the cold storage chamber is important, as the evaporation must be kept low, and the eggs should not be allowed to stand for any length of time in a higher temperature after being removed from cold storage. Unfertile or sterile eggs keep much better than the fertile ones, and poultry dealers are giving more attention to the producing of sterile eggs. In many cities sterile eggs can be obtained in large quantities direct from the farm, and these may be kept for many weeks without any change in flavor if kept in a clean place.

Like all foods high in protein content, eggs should be cooked at a low temperature in order to prevent toughening the albumen. Water should not be allowed to boil while the egg is in it, whether the egg is being cooked in the shell or out of it (poached). The length of time for cooking depends on the amount of heat used, number of eggs being cooked, whether the eggs are very cold when

placed in the water, the size and freshness of the eggs, the size of the pan and the material of which it is made, and the amount of water used. The idea that an egg should boil three minutes is not logical, and is not worthy of much faith. Practically no two households will be found where the above-mentioned conditions are identical or even similar, and it would be impossible to obtain uniform results when the only uniform condition is the time. Fried eggs are generally considered difficult to digest, and this is probably true if they are fried at a temperature high enough to toughen the protein or to decompose the fat used. As butter is the favorite fat for frying eggs and its "cracking point" is low, irritating acids are apt to be formed. The smoking of the fat means that the acids are present, and many people wait for this "sign that the fat is hot enough for use" before dropping the eggs into it. The coating of fat may be difficult for the digestive juices to penetrate, and thus cause trouble for a weak digestion.

Soft-cooked eggs are the most readily digested, though hard-cooked eggs are as completely digested and assimilated, the difference being in the length of time required, provided the hard-cooked are well masticated. Raw eggs are not so easily digested as slightly cooked ones, and the mistaken idea in regard to this matter has given rise to the use of raw eggs with the sick to a much greater extent than is warranted by the facts.

Eggs are a concentrated form of food, and during the greater part of the year might be classed as inexpensive. At 35 cents or more per dozen they cannot be used freely in a family of limited means, but in combination with a white sauce they may be served at less cost as an omelet; or they may be hard-boiled and chopped or sliced, and, with the white sauce, they make a very good substitute for meat in the diet and require less fuel for cooking. Instead of the white sauce, the cost may be further re-

duced if bread crumbs and milk are used, and still other very palatable and nutritious combinations may be made. Grated cheese and pieces of meat not usable by themselves may be added to form a substantial dish. When one does not need to restrict the number used, most appetizing souffles and desserts are a pleasing change from puddings and pies. Because of their ease of digestion and the completeness of their absorption, eggs are desirable for people with impaired or weak digestion. Other advantages of eggs as a food are that they contain no injurious substances, such as may be found in other animal forms.

There is a tendency on the part of the public to be suspicious of hospital eggs. Whether there is any justification for this suspicion, there certainly is no reason why hospitals should not serve good eggs. Even if the financial situation will not permit the buying of strictly fresh eggs, a candling apparatus may be devised with practically no expense and very little time and trouble. Not a great deal of time is required to candle a case of eggs, and the trouble is far more than counterbalanced by the satisfaction of knowing that the patients and others are being served only good eggs. It is most deplorable for a sick person, or even a well person, to attempt to eat an egg that causes nausea and perhaps a dislike for eggs the rest of his life; and, incidentally, it is most humiliating for a dietitian to be told that such a thing has occurred in her domain.

At the Cook County Infirmary, Oak Forest, Ill., the chief engineer made for the writer an admirable candling device. It consisted of a tin tube, fitted to a standard, with holes cut into it for the eggs and an extension above for the light. It was a very efficient as well as a presentable piece of apparatus, and cost but a few cents. It was used in a small store room that had no window, and

air was provided by leaving the door open and hanging a black curtain in the entrance.

At another time an ordinary tin box was used with very good results. Holes were cut into the side of the box large enough for eggs to be held in front of them, an electric bulb was inserted, and the box tightly closed to exclude all other light. This apparatus will not permit of close grading, but it enables the candler to determine by spots and air spaces which eggs are suitable for eating. Wherever, however, it is possible to obtain the infertile eggs, the results more than justify the effort.

CHAPTER XI.

MEATS—THEIR STORAGE AND PREPARATION.

FEEDING VALUES AND RELATIVE AVAILABILITY OF BEEF, VEAL, MUTTON, PORK, LIVER, AND SWEETBREADS—CHOICE CUTS AND METHODS OF PREPARATION—CURING PROCESSES OF MEATS—BEEF JUICE AND BEEF TEA.

If meat is used as a food material itself, it should be submitted to a high temperature at first in order to sear the outer surface and retain the juices, and then the temperature should be lowered for the rest of the cooking, as in roasting and broiling—that is, the outer crust is sacrificed for the sake of improving the remainder. If both meat and broth are to be used, as in stews and fricassee, a slow cooking is required at a low temperature in a well-covered kettle, and in this way a very acceptable food may be obtained from a tough piece of meat. If only the broth is to be used, the meat should be cut into small pieces in order to expose the largest possible surface; it should be put in cold water and allowed to stand a half hour in order to dissolve out the proteins which are soluble in cold water; it should then be cooked slowly in a tightly covered vessel in order to retain all the flavor. Not less than an hour, and more if possible, should be allowed for a quart of broth to cook, but it should not be permitted to boil. By this process all the soluble proteins, extractives, and mineral salts are in the broth, which should be poured off the meat, but not strained. The flocculent particles are the protein, and should be given unless the patient is in such an extreme condition that even these minute bits of solid matter disturb him.

Commercially prepared bouillon cubes and meat extracts are sold, to which has been attributed more value

than their composition warrants. The impression has been given that they are a concentrated form of meat, especially valuable for invalids, though for most of them their advertisers do not claim that they are beef broth or essence. In a bulletin issued by the United States Department of Agriculture the chief constituent of bouillon cubes is given as common salt, meat extract being present in small amounts. An extract of plant or vegetable is also used in small amounts to give flavor. "The bouillon cubes on the market are sold at from 1 to 2 cents each, and it takes from 15 to 20 cubes to weigh 2 ounces. This would make the cost of 2 ounces of bouillon cubes 25 to 40 cents. It is, therefore, apparent that the cubes, which contain about two-thirds salt and never more than 28 percent meat extract, are an expensive form of securing meat extract. The 45 cents, if spent for semisolid meat extracts, will purchase two to three times the amount of meat extract that it is possible to obtain for the same money in the form of bouillon cubes."

For young and tender meats, broiling and roasting give the best results. Older and tougher fibers are much more difficult to make palatable in this way, and stewing, boiling, en casserole, etc., are more satisfactory ways of serving them. In roasting and broiling, no fat should be allowed to accumulate in the pan, as it will coat the outer surface of the meat, and it will be difficult for the digestive juices to penetrate the crust thus formed.

All meats have much the same composition, that from different animals varying chiefly in the proportion of the constituents. Lean meat is made up of bundles of fibers held together by connective tissue, with varying quantities of fat scattered through and between the membranes. There are many forms of protein in meat—albumin in the blood and muscle; collagen, which becomes

gelatin when cooked, in the skin, connective tissue, tendons, and bone; fibrin, a substance in the blood which causes it to coagulate and form a clot when exposed to air; myosin in the muscles and tendons, which causes the stiffening of muscles after death, known as rigor mortis; albumin and globulin in the blood, and many others. As some of these are soluble in cold water and some are not, the manner of cooking figures largely in the results we get when the meat is prepared for serving.

After an animal is slaughtered, the meat passes through three stages. In the first stage, immediately after death, the meat is usable; in the second stage, rigor mortis has taken place and it is not suitable for food; in the third stage acids have developed which soften the muscle fibers, and it is again fit for food. This is known as the "ripening" process. When vinegar or other acid is rubbed on tough meat in order to soften the fibers and make it more tender, this natural process is simply carried out artificially.

Our most expensive cuts of meat are taken from the parts of the animal which are least exercised. They are the more tender and fine-grained parts, but they have less juice and extractives. The tenderloin and porterhouse steaks are cut from the portion where there is little or no exercise of the muscle, while the round and the flank steaks are from the leg or just in front of it, where the muscle is much exercised; the latter are just as nutritious and more highly flavored, and, with proper cooking, they may be made very palatable; owing to the prevalent American habit, or cultivated taste, which demands delicate flavors, the first mentioned are much higher priced.

Beef should be fine grained and well mottled with fat; the lean should be bright red; the fat firm, yellowish, and should crumble easily. Beef has no very pronounced

flavor, and consequently it palls on the appetite less than pork or lamb. Veal has less fat and is less nutritious than beef, its connective tissue has more gelatin, and it should be thoroughly cooked, while beef is preferred rare by most people. Veal broth is considered next to chicken in delicacy. There are some contentions to the effect that veal is difficult to digest, but, if thoroughly cooked and properly masticated, there is nothing about veal to give any trouble in digestion. Dr. Lorand, of Carlsbad, uses veal and chicken in the same way in diets for delicate people, and gives veal preference over beef as a food.

Lamb is less easily digested on account of the greater amount and the higher melting point of its fats. It has a strong flavor. If the outside skin comes off easily, the mutton is good. Mutton should be of a pinkish color and the fat hard and flaky. In lamb chops the bone is red, but in mutton chops it is not. Lamb must be well cooked, but mutton need not be.

Fresh pork, owing to its high percentage of fat, is difficult to digest, but, if cured or smoked, it is not. It must be very thoroughly cooked because of the possible presence of trichinæ. Trichinæ withstand the action of heat and smoke if applied only in moderation, and may be transmitted to the human being through the eating of pork meat. Pork is frequently spoken of as an unclean food because of the unclean habits of the hog, but the gastric juice of the hog is exceptionally efficacious and will transform anything the animal eats. The fat of bacon is in granular form and is easy of digestion. Ham is not difficult of digestion. Ham and bacon are sugar-cured and smoked, which gives them a good flavor and makes them keep well.

Liver has much protein and carbohydrate in comparison with other meats, and is valuable in a diet requiring high iron content.

Sweetbreads appear prenatally in the calf and disappear after the animal has ceased to live on milk. The thymus or throat sweetbread is the thymus gland of the calf, and the belly sweetbread is the pancreas. Often the pancreas of the hog is sold as "stomach sweetbread." Sweetbreads are easy of digestion, but contain a large percent of nucleoprotein, a form of protein which is richer in purin-yielding components than other forms, and are contraindicated in cases of gout. They may be served in many ways, but they are expensive and spoil easily.

For those who desire the nourishment of meat, and yet are not able to digest it in the ordinary way, the pulp may be separated from the fiber by scraping a thick piece of beef with the dull edge of a knife or with a spoon. It should be scraped lengthwise of the fiber, so as not to break the fiber or get any of it in the pulp. It may be made into sandwiches, or formed into balls and seared in a hot pan without any fat. The value of the meat ball is apt to be counteracted in the cooking unless done by a skilled person, as it is very easily overcooked and the protein hardened until it is as bad as the fiber in the original piece of meat. The juice may be extracted by subjecting the meat to high pressure, which is beneficial in cases of severe gastric disturbance, in typhoid, and for infants after one year of age. Care should be taken, in warming the juice for serving, not to overheat it. Beef juice contains fourteen times as much protein as the average beef tea, but the beef tea is richer in flavor, and the two are very good when combined.

Meats are a cheap source of protein. They are a concentrated food, and, because of the small amount of "ballast," they are readily attacked by the digestive juices and quite completely absorbed. As a people we eat too much meat; especially persons leading sedentary lives should not eat meat three times a day. So much meat is

not needed, nor can it be cared for in the body except by one who does hard, physical labor or lives out of doors, or does both; but nevertheless there is probably no hospital of any pretentions as to size where meat is not served three times daily to its private room patients, and the dietitian cannot with impunity attempt to change this order. The majority of people with whom one discusses the subject will speak deploringly of the use of so much meat, but no one except the physicians will ever be able to alter the custom, and not until they convince their patients that it is a harmful practice will there be any improvement.

CHAPTER XII.

FISH AND OYSTERS IN THE DIETARY.

OYSTERS ARE SIMILAR TO MILK IN FOOD VALUE—OILY FISHES MORE NUTRITIOUS THAN OTHERS—SOME SUPERSTITIONS EXPLODED—FRESHNESS OF GREAT IMPORTANCE—HOW FLAVOR OF OYSTERS IS AFFECTED.

Fish is perhaps the most natural substitute for meat, as its nutritive value is much the same, with the exception that it contains a smaller percent of protein. Fish has few extractives, and has therefore no very decided flavor. The oily fishes—salmon, mackerel, and herring—have higher food value than the nonoily—perch, cod, trout. The theory that fish is a brain food has long been exploded, not only because we know there are no "brain foods," but there is no justification for the statement that fish is rich in phosphorus.

There is no more waste in fish than in most animal foods, and it is less expensive. It serves as a variety in the diet, and, as a rule, is easily digested, which makes it well adapted to people living a sedentary life. This statement does not apply to lobster, shrimp, and those varieties of fish which are very "rich" foods and have no place on a hospital dietary. Oysters somewhat resemble milk in regard to amount and proportion of nutriment. They are extremely easy of digestion, and should be only slightly cooked, but probably are more readily digested if not cooked at all. Combined with milk and butter and served with crackers, in the form of a stew, or thickened with a larger proportion of cracker or bread crumbs in an escallop, they are a very good food for convalescents or people who are exercising but little. The carbohydrate in oysters is in the form of glycogen.

There is a question in regard to the eating of raw oysters. They may have been "floated" in unclean water, or, if the oyster bed is near a city, there is danger of sewage contamination and typhoid "germs." The flavor of oysters is affected by the locality in which grown and also by the season of the year. They must be kept in a very low temperature, as they spoil quickly, and should not be eaten after being in a warm room for any considerable length of time, but this same statement may be made concerning any form of fish. In the decomposition of animal tissue, poisonous substances called ptomaines are formed, which are the result of bacterial action, and which is quite apt to accompany putrefaction. Occasionally oysters are seen with a green color, which may be due to a plant on which they feed or it may be due to the presence of copper. If it is a grass-green color and there is a slimy verdigris-like secretion in the folds, it is due to copper; but if a dark-green, it is due to the plant on which the oyster fed. Some seasons there are found on the market a pink variety, but the peculiar color, unless it is from the copper, neither adds to nor detracts from the food value of the oyster.

CHAPTER XIII.

SPECIAL DIETS IN DISEASE.

CERTAIN DISEASES THE RESULT OF FAULTY USE OF FOOD BY THE SYSTEM—TREATMENT MOSTLY DIETETIC—SPECIAL DIETS NECESSARY, BUT MUST BE USED WITH INTELLIGENCE—LISTS OF DIETS.

In practically all metabolic diseases the difficulty is due to lack of proper metabolism of one or more of the food constituents—carbohydrates, fats, or proteins. As has been stated before, the nourishment of the body depends not on the food which is eaten, but on that which is assimilated. Food may be of the right kind, the right quantity, and be well cooked, yet the body may not be able to utilize it. Obesity, diebetes, gout, dyspepsia, and all other diseases in which diet plays a large part in the treatment, may very frequently be traced to improper eating, bad hygiene, or overfatigue, or a combination of all these.

If the food is not thoroughly masticated, the particles may be so large that the digestive juices cannot penetrate them and they are not all digested; or the food may be too long in the stomach or intestines and may be decomposed. In either case the digestive organs are overtaxed, and, following a natural law, they will eventually wear out or rebel in some manner. Overeating has the same effect; irregular eating, or eating just previous to or following a great mental or physical effort, interferes with digestion. The secretions of the digestive tract are affected by fatigue and such emotions as fear, anger, and grief. No doubt many "attacks" of indigestion have been brought on by dwelling on trouble or business cares while eating.

Indigestion and constipation are apt to be forerunners

of these diseases of metabolism. If attended to in time, removing the cause may be all that is necessary for cure or prevention of the disease. Fothergill says that protection from indigestion has saved many lives. Imperfect elimination of waste causes poisonous substances to be formed; fermentation in the intestines produces gases which cause the stomach to be distended, which may interfere with muscular activity; or inflammation may be caused by coarse particles of food. In any of these conditions headache or other discomforts result, warning the individual of his indiscretion.

Constipation may be due to imperfect peristalsis, intestinal obstruction, too highly concentrated or too nutritious food, insufficient food or insufficient fluid, astringent food, irregularity in diet or lack of exercise. These conditions may be overcome by eating an abundance of coarse foods, in order to furnish the bulk necessary to stimulate peristalsis, and by drinking plenty of water. Fruits are very beneficial in constipation, as the acids stimulate the flow of the secretions, and the cellulose furnishes the necessary bulk, particularly if the skins are eaten. If one or more of the conditions mentioned above are allowed to exist for any considerable length of time, some metabolic disease is very apt to develop.

Medical men are depending less on the use of drugs and more on diet in the treatment of these and many other diseases. Dietetic treatment cannot be given mechanically, as a diet list may be made up which includes every food desirable for a given disease and none that is undesirable, and yet there will be few cases where such a list could be used without variation. For successful treatment, there must be close cooperation between the dietitian and the medical man. The physician, knowing the condition of the patient and following his symptoms from day to day, can suggest necessary changes in diet; but,

as a rule, the medical man has no time to go into the detail of food composition, the effect of heat on food materials, and chemical changes which take place in some foods during cooking, to the extent that the well-trained dietitian of today has been taught to do. All of these matters are important factors in the digestibility and assimilability of food, and should be given consideration in prescribing a diet. Then, too, the personal element must be taken into account, as many times a food that would be given to a young person would not be acceptable to an elderly one. The physical condition, previous environment and habits, personal idiosyncrasies, and probable complication of other diseases than the one being treated, may modify the diet to a greater or less extent. Patients who will submit willingly to the care or the physical treatment, no matter how painful or disagreeable, which their physician tells them is necessary, will positively refuse to eat food of which they are not fond, or which is prepared in a way they do not like. A patient should be given, as far as possible, the things he enjoys. If the dietitian knows his likes and dislikes, she may be able to give them consideration in the majority of instances; but, when it is not possible to do so, the physician can do more than anyone else to reconcile him to the diet. Very few kitchens are adequately equipped and provided with enough people to give good service to the entire house, and take care of many special diets and special orders. Physicians who are not familiar with the prevailing situation have been known to ask for so many extra things that it would be impossible to provide them, and many times a satisfactory substitute could well be given with no inconvenience to anyone. If there are twenty-five or thirty patients getting special diets in various parts of the house, representing different physicians' ideas of treatment, with perhaps as many more patients having special things

ordered for them, and almost an equal number of things brought to the patient by friends and sent to the kitchen for preparation and serving, great inroads are made on the time of the kitchen help, and there must be a way of regulating this condition.

A prescribed diet list for any specific disease is no longer found to give the best results. The day of the special diet list is passing in the hospital and we are giving individual treatment instead. Instead of determining what foods a patient may or may not have, we ascertain his tolerance for carbohydrates, proteins, and fat. This requires knowledge and skill as well as much work on the part of the dietary department, but all this is more than counteracted in the satisfying results obtained. Individual treatment can be given successfully only when there is close cooperation between the doctors, nurses, and dietitians. Very few nurses have had sufficient training in dietetics to meet this new demand, but, with the rapid progress this phase of medical treatment is making, the education of the nurses, and eventually the whole community, will naturally follow.

While we are doing much in the way of individual treatment, it has not yet been universally adopted, and, in order that there may be some sort of a guide at Lakeside Hospital for the nurses in the diet kitchen who prepare the food for the special diets, and for the nurses who do the serving in the wards, a set of diets was prepared for several of the more common diseases. At the request of the writer Dr. Christy furnished the concise but comprehensive accompanying statements, which add very greatly to the helpfulness of these lists.

For gastric and duodenal ulcers, some of the physicians use the regular Lenhartz diet with no variations. When the patient is ready for a comparatively full diet, he is served from the list prepared for hyperacidity (list

No. 2). If the trouble should be low acidity, the low protein list is used (list No. 3). In other cases the Sippey diet is used.

Post-Operative Care of Gastric and Duodenal Ulcer Cases—Modified Sippey Treatment for Gastric Ulcer.

FIRST WEEK.

Rectal tap of sodium bicarbonate and glucose, 4 per cent each.

First day (post-operative)—Water in small amounts by mouth and by hypodermoclysis as ordered by house staff.

Second day—Water by mouth as ordered.

Third day (if routine treatment is ordered)—½ ounce each of milk and cream every hour from 6 a. m. to 8 p. m. Each morning before feedings are begun give 1 dram of bismuth subcarbonate in small amount (1 or 2 ounces) in warm water. Midway between feedings give 5 grains each of calcined magnesia, sodium bicarbonate, and bismuth subcarbonate in ½ ounce of warm water. If no discomfort at end of third day and patient does well, then

Fourth day—1 ounce each of milk and cream every hour. Continue powders.

Fifth day—1½ ounces each of milk and cream every hour. Continue powders.

Sixth day—Soft egg added to milk in the morning and afternoon.

Seventh day—Soft egg; 2 if desired. Add 3 ounces of well-cooked cereal at noon. Then gradually add eggs and cereal to other feedings until 2 or 3 eggs and two or three feedings of 3 ounces of well-cooked cereal are taken.

Total milk at any one feeding should not exceed 6 ounces. Maximum of feeding should not exceed 4 eggs and four feedings of cereal in addition to milk and cream.

Cereals—rice (well cooked), oatmeal, farina, and cream of wheat.

At the end of ten days a small quantity of stewed fruits, jellies, or seedless marmalades, adding cream soups of all kinds, puree of potato, toasted crackers, and milk toast.

SECOND WEEK.

Increase the length of time between feedings, so that at the beginning of the third week food is taken every two hours. Total bulk should not be more than 8 ounces. Eat at least five times per day for several months.

For one year or more keep on this diet—milk, cream, cereals, soft eggs, vegetable purees, cream soups, bread and butter, and meats when desired.

For cardiac cases Dubois' milk diet (list No. 4) and the cardiac diet (list No. 5) are used.

The treatment of typhoid has been somewhat revolutionized in recent years by the use of a high calorie diet. A milk diet in typhoid is illogical, as it does not furnish enough protein to cover the loss. The extent to which the digestion is impaired is only about 10 percent, so there is no objection to meat in moderate quantities, but it should be finely minced. The high calorie typhoid diet (list No. 6) was designed to give approximately 3,000 calories daily. If enough calories cannot be given by the intake of the plain food materials, lactose may be added to the milk to somewhat increase the number. Since the feedings must be given frequently, it is quite desirable to have a variety. This list not only avoids the monotony of broths and milk, but permits of the nourishing cream soups, custards, etc., being interchanged with the more refreshing ices, fruit juices, etc., which will induce the patient to eat more than he might otherwise. Fresh pineapple juice has been found to be very valuable, not only in these cases of high temperature, but in anorexia,

anemia, gastritis, and with the convalescent diet (list No. 6).

The treatment of diabetes is almost entirely dietetic, but it must necessarily vary with the individual. Much more attention has been given to this disease the past few years, and the treatment of it has undergone a decided change within the past two years. Formerly it was thought that, in addition to the consideration given to glycosuria, it was important to maintain nutrition and prevent loss of body weight. Dr. Allen, of the Rockefeller Institute for Medical Research, thinks that this is not the case, stating that "the reduction of weight is in itself beneficial to the diabetic condition and serves to spare the weakened function and increase tolerance." He gave a very comprehensive statement of his theory in the *American Journal of the Medical Sciences* of October, 1915. This treatment is being adopted by many medical men with very good results. In the treatment of diabetes it is important not only to remove glycosuria and acidosis, but the patient should be followed up. He should be educated to control his own condition and make his own tests; then, when advice is needed, he can get it before too much damage has been done. The diabetic diet (list No. 7) includes a general classification of food materials which may be safely used in any form of treatment, and is designed for use of the patient after he has left the hospital; this same diet may be used for obesity.

The diet lists for nephritis (No. 8), purin-free (No. 9), high iron content (No. 10), and benzidin (No. 11), are self-explanatory.

No special diet for tuberculosis is advisable, the point to observe being always to furnish a nourishing diet that will not overtax the digestion. The patient can utilize fat in large quantities, as he should be out of doors a great deal, even if he is not exercising very much. Milk and

eggs are essential, of course, but the tendency to use them to excess is rather strong, and this is apt to give the patient a feeling of revulsion toward them after having consumed large quantities for any considerable length of time. One quart daily is a liberal allowance of milk, and a part of it may be served in cream soups, custards, or other forms, as well as a beverage. Three eggs daily are plenty and as many as the majority of patients will take.

In addition to these diet lists, some of which are used in the surgical as well as in the medical wards of Lakeside Hospital, there is the test breakfast, which is in general use—tea and bread.

The liquid diet, soft with care, and convalescent are in use throughout the hospital as preliminaries to the full hospital diet.

Too great emphasis cannot be placed on the statement that no diet should be followed implicitly, that preparing and cooking food require skill, and that the methods employed affect the results to a very appreciable degree.

No. 1. Diet for Gastric Ulcers—Lenhartz Diet.

Day	Eggs,* amount	Sugar, grams	Milk,* c.c.	Raw beef, chopped, grams	Milk and rice, grams	Zwieback or crackers, amount	Raw ham, chopped, grams	Butter, grams	Calories, amount
1	2	.....	200	.....	.....	.....	.....	.....	200
2	3	20	300	.....	.....	.....	.....	.....	420
3	4	20	400	.....	.....	.....	.....	.....	637
4	5	30	500	.....	.....	.....	.....	.....	777
5	6	30	600	35	.....	.....	.....	.....	955
6	7	40	700	70	100	.....	.....	.....	1,135
7	8	40	800	70	100	.....	.....	.....	1,588
8	8	50	900	70	200	1	.....	.....	1,721
9	8	50	1,000	70	300	2	.....	.....	2,138
10	8	50	1,000	70	300	2	50	20	2,478
11	8	50	1,000	70	300	3	50	40	2,941
12	8	50	1,000	70	300	3	50	40	2,941
13	8	50	1,000	70	300	4	50	40	2,941
14	8	50	1,000	70	300	5	50	40	2,941

*Serve milk and eggs as egg-nog; set glass in bowl of ice; to be sipped by spoonfuls.

This diet is used primarily in gastric and duodenal ulcers, the idea being to give as little food as possible to the patient, but enough to keep up caloric value and thereby to lessen irritation.

To be served at 8 and 11 a. m. and 2, 5, and 8 p. m.

From first to seventh day, inclusive, all eggs are beaten. From seventh to fourteenth day, inclusive, half are beaten and half are cooked. Third week, soft with care diet. Fourth week, soft diet. Fifth week, house diet.

Absolute quiet for four weeks. Bowels not to be moved for first week, not often for three weeks; then small glycerin or warm water enema. Out of bed twenty-eighth day. Home sixth to tenth week.

No. 2. Diet for Hyperacidity (Salt Poor).

This diet, which is high in protein, is indicated in hyperacidity. HCL is used up entirely in protein digestion. It is salt poor because salt enhances production of HCL. To be used for gastroenterostomy and duodenal ulcer when patient is put on house diet.

Roast meats, steak, bacon, chicken, fish, chops.

Eggs in any form.

Cereals; rice as a vegetable or cereal.

Legumes, green vegetables, salads (except those made of fresh fruits), and tomato.

Breads, of coarse flour.

All fruits, except lemons, grapefruit, and gooseberries. Fruits given to patients in this condition are better if cooked.

Soups of all kinds may be given sparingly, except tomato.

Desserts—Cream desserts, custards, gelatins, soft puddings.

Milk may be given between meals. No coffee or tea.

Olive oil may be taken in large quantities.

No. 3. Diet for Subacidity (Low Protein, Salt High).

This diet, as its name implies, is for low acidity in the stomach. Since protein digestion depends primarily on hydrochloric acid, and as this is low, it will be evident that protein will not be well cared for. Salt should be high, as it is a forerunner in the production of hydrochloric acid.

Bread, butter, and sugar.
Cereal—Once daily.
Eggs or fish—Once daily.
Noodles or macaroni.
Cream soup.
Legumes, potato, green vegetables.
Fruit, dessert.
Coffee or tea.

No. 4. Dubois' Milk Diet.

This diet is used primarily in the cardiac cases where there is extreme decompensation. The idea is to limit fluid intake and preclude solid food from an already overcongested and inactive intestinal tract.

Day	7 a. m. ounces	9 a. m. ounces	11 a. m. ounces	1 p. m. ounces	3 p. m. ounces	5 p. m. ounces	7 p. m. ounces	9 p. m. ounces
1	3	3	3	3	3	3	3	3
2	4½	4½	4½	4½	4½	4½	4½	4½
3	6	6	6	6	6	6	6	6
4	9	9	9	9	9	9	9	9
5	12	6	6	9	6	6	9	6
6	12	6	6	9	6	6	9	6
*7	.....	.....	.....	.....	.....	.....	.....	.....

On fifth day—brown bread added to diet, with honey or butter. G. A. M. lime juice, 2 ounces in water; 4 ounces if ordered. No other fluid unless ordered.

*Light diet with milk in afternoon.

No. 5. Diet for Cardiac Disease.

This diet is designed to meet the needs of chronic heart cases, because of low fluid content and the fact that it is an easily assimilable diet. Since we have great congestion of the alimentary tract, digestion proceeds slowly. It is also a diet of food materials which will not readily ferment. Fermentation and distention are contraindicated because of the added embarrassment to the heart action and circulation.

Water—In limited amounts. To be specified by the ward man.

Ice—In small quantities in severe cases.

Milk—8 ounces three times daily. Sipped slowly with meals.

Vegetables—All green vegetables. Cereals and starchy vegetables are restricted. No fermenting vegetables, such as those of the cabbage family or dried legumes.

Bread—In small amounts.

Meats—Roast beef, steak, lamb, chicken, fish. No internal meats, such as liver, sweetbreads, heart, etc. No raw, smoked, cured, or rare meats.

No eggs.

Fats—Butter, cream, olive oil, mayonnaise.

Desserts—Junket, custards, jellies, ices, sherbets, stewed fruits, oranges, grapefruit.

No. 6. Diet for High-Calorie Typhoid.

As the name implies, this gives as great a number of calories of food as possible to a typhoid patient, and takes away the undesirable features of a solid diet, which would enhance perforation and irritation to an ulcerated and inflamed bowel.

Milk—Hot or cold; modified with lime water, soda water, apollinaris, or vichy; or in the form of koumiss, buttermilk, whey, junket, or peptonized milk.

Tea or coffee.

Soups—Cream soups, or purees with all vegetables strained; clear soups; broths; oyster stew, with oysters removed.

Gruels—Of any cereal not containing very high percentage of cellulose, and strained through fine strainer.

Albumin drinks—Water, plain or flavored with fruit juices; milk, plain or flavored with fruit juices.

Ice cream or ices, without solid particles of fruit or nuts.

Eggs—Soft cooked, raw, or in the form of egg-nog or custard.

Meat—Finely minced chicken or beef, or scraped beef.

Crackers—Soaked in milk or broth.

Soft puddings, gelatin, apple sauce strained.

No. 7. Diet for Diabetes.

Carbohydrate food may be given to chronic cases in small amounts at the direction of the ward man. This diet is so-called carbohydrate-free, for in the case of diabetes the patient is unable to assimilate carbohydrate food except in small amounts, and consequently any quantity taken above his tolerance will immediately pass into his blood, causing high sugar content. Under these conditions the kidneys will be unable to hold it back longer, and it will filter through into the urine, giving rise to the condition we know as glycosuria, the chief manifestation of diabetes.

Soups—All stock soups and bouillons.

Meats—Meats (except internal organs, such as liver and sweetbreads), poultry, and fish of all kinds (not prepared with flour) may be used in comparatively small amounts.

Eggs in any form.

Vegetables—Asparagus, artichokes, cauliflower, cab-

bage, brussels sprouts, sauerkraut, onions, young green beans, tomatoes, celery, lettuce, watercress, endive, chicory, spinach, pickles, olives, mushrooms, eggplant, Swiss chard (either leaves or stalks).

Fruit—Gooseberries, rhubarb, grapefruit.

Nuts of all kinds, except chestnuts.

Bread—Bran muffins (see recipe).

Desserts—Gelatin (sweetened with saccharin), flavored with coffee; cream, nuts, sherry, brandy, custards made of cream and sweetened with saccharin.

Clotted cream—Ice cream sweetened with saccharin.

Cheese—All kinds used abundantly.

Beverages—Tea, coffee, lemonade (sweetened with saccharin).

Fats—Should be used plentifully in cooking; salad dressings, cream.

No. 8. Diet for Nephritis.

This diet is low in most extractives, as these substances are high in purin bodies, which are eliminated poorly by the kidneys. It is also low in salt, as salt is eliminated poorly, and the edema of nephritis is largely dependent on the high salt content in the tissues from the fact that a diseased kidney eliminates salt poorly. The fruit acids, being also undesirable to inflamed kidneys, are either left out if they contain high amounts of the acids, or the fruit is cooked, which, in a measure, overcomes that undesirable feature.

Milk in any form and foods made from milk in limited quantity, buttermilk, koumiss, whey, junket, peptonized milk, cream, cocoa.

Cream soups of all kinds, except cream of beans and cream of peas.

Fruits of all kinds, stewed, except lemons and grapefruit.

Vegetables—Potatoes, squash, carrots, beets, cabbage, cauliflower, brussels sprouts, lettuce, celery, artichokes, tomatoes, spinach, sauerkraut, asparagus, onions.

Fats of all kinds, butter, cream, olive oil (in salad dressing).

White bread and cereals in moderate amounts, toast, zwieback, crackers.

No. 9. Purin-Free Diet.

This is given to gouty patients because the purins are the forerunners of uric acid, and, as the disease is a deposit of sodium urate or a salt of uric acid in the tendons and joints, it will be evident that anything that favors uric acid formation should be low in this diet. Purins should be low because they are precursors of uric acid. (See Sherman on Purin Diets.)

ALLOWED.

White bread, crackers.

Rice, potatoes, macaroni.

Apples, grapes, dates, figs, raisins, honey, nuts, oils, all forms of fat.

Milk and cheese in moderate amounts, eggs.

PROHIBITED.

Rich meats, soups, sauces, and gravies; game, salt fish, salted or cured meats, sausage, lobster, all foods highly seasoned or pickled.

Rich pastries, freshly made breads.

Tomatoes, cucumbers, mushrooms, rhubarb, asparagus, legumes.

Tea or coffee, alcohol in any form.

This diet is suitable for exophthalmic goiter, with the addition of chicken and fish, salt being added and acids avoided.

No. 10. Diet Containing High Iron Content.

This diet is indicated in secondary anemia and chlorosis, where the iron content of the tissues is low and consequently there is a low hemoglobin estimation in blood.

Liver, beef steak, roast beef.

Eggs.

Oatmeal, cereals made from wheat.

Bread—White, rye, whole wheat, graham, bran.

Beans—All kinds, peas.

Peanuts, almonds, walnuts, spinach, prunes, raisins, dates, figs, apples.

The following contain less than 1 percent of iron: lettuce, celery, corn, cornmeal, cabbage, asparagus, potatoes, honey, grapes, cocoa.

No. 11. Benzidin Test Diet.

Milk, crackers, rice.

This is an iron-free diet. The idea is to free the alimentary tract of any added iron and then test the stool for iron. If iron is present, and it is a fact that none was given in the food, it must come from one source—the hemoglobin of the blood. It is taken as a positive test for bleeding into the intestinal tract and as evidence of an ulcer. Patients should be watched to make certain that they eat nothing but those articles listed.

No. 12. Liquid Diet.

Milk—Sweet, modified with lime water or barley water, or in the form of buttermilk, whey, or junket.

Broths, gruels strained, beef juice, beef tea.

Cocoa (hot or iced), tea (hot or iced), coffee.

Fruit beverages—Lemonade, orangeade, grape juice.

Barley water or rice water.

Albumin drinks—Milk, water.

Cream soups.

Egg-nog.

Frozen creams or ices.

Include one quart of milk and three eggs daily. To be given in eight feedings.

No. 13. Light Soft Diet (in Addition to "Liquid Diet").

Dry or milk toast.

Eggs, soft boiled or poached.

Custards, gelatins.

Oranges.

Apple sauce, and prunes, strained.

Cereals—Arrowroot, tapioca, or rice, in the form of cereal or dessert.

Six servings daily. Never serve cereal and eggs at the same meal.

No. 14. Convalescent Diet (in Addition to Light Soft Diet).

Grapefruit (all fruits to be strained, and all vegetables strained or mashed when advisable).

Vegetables—Peas, carrots, asparagus, spinach; celery, cooked; tomato, cooked; potato, baked or mashed; rice, squash.

Fish, chicken, steak, lamb chops, scraped meat balls, scraped meat sandwiches.

Constipation (Dr. H. Feil).

Habit.—Go to the toilet every morning immediately after breakfast. Go, whether there is a desire to have a bowel movement or not. Go to the toilet when the desire comes, but try to have the desire after breakfast. If movement does not occur, assist by deep breathing—do not strain.

Exercise.—Walking, running, outdoor games, dancing,

gymnastic exercises should be done each day. Take at least twenty deep breaths night and morning. A good form of mild exercise may be carried out as follows: Grasp with both hands a pole or broomstick; then, with arms stretched out, bend the body forward, with the feet together, then backward, and to the right and to the left. Perform these movements alternately—say, twenty times night and morning.

Diet.—Drink eight glasses of water daily, a glass or two of cold water on rising and at bedtime. Eat freely of butter, cream, olive oil, and fruits.

Breakfast.—Cereal, with milk or cream and sugar (oatmeal, cornmeal, hominy, shredded wheat, boiled rice, cream of wheat). Graham bread, corn bread, rye bread, bran bread, butter, molasses, honey, jellies, preserves, eggs or fish, bacon, weak coffee with milk or cream, malted milk, buttermilk. Fruits, raw or stewed, at the end of the meal.

Lunch.—Little cold meat or egg sandwiches, potatoes, vegetables, bread as above, buttermilk or malted milk, fruit or fruit juices.

Dinner.—Vegetable soup, bread and butter as above, fish or meat, potatoes, vegetables (lettuce, spinach, carrots, parsnips, oyster plant, cauliflower, squash, tomatoes, beets, onions, cucumbers, cabbage). Fruits, jellies, buttermilk or malted milk, or weak tea and coffee with milk or cream.

Avoid.—The drinking of milk, white bread unless well-buttered and thoroughly chewed, and much meat.

Chew.—All food to small bits.

Deep Breathing.—Take twenty deep breaths night and morning.

BRAN BREAD.

Should be eaten in place of white bread.

Take 2 cups bran flour, 2 cups wheat flour, 1 cup sour milk, 4 tablespoons molasses, 2 teaspoons soda, a little salt. Bake in muffin pans, one to be eaten with each meal.

CHAPTER XIV.

CLASSES OF PEOPLE TO BE FED.

SURGICAL PATIENTS—MATERNITY CASES—PRIVATE PATIENTS—FEEDING INTERNS AND NURSES—HOSPITAL HELP—MAKING MENUS—FOOD CARTS AND CONTAINERS—PANTRIES—DIET TRAINING FOR NURSES—THE COMMISSARY.

Feeding Surgical Patients.

The diet is not so vital a part of the treatment of surgical and maternity cases as it is of medical cases, but indirectly it is an important phase of their treatment in the hospital. As a rule, these patients have good appetites and probably unimpaired digestion, and the need is not so great for exercising care to prevent them from eating the wrong foods; after the first few days precaution may be needed to prevent their eating too much. Frequently these patients, especially surgical cases, want a great deal to eat, or perhaps want to eat often, because that is practically the only break in the monotony of the day. They should be urged to spend a long time at their meals—to eat slowly and masticate thoroughly, which lessens the danger of overtaxing the digestive organs and at the same time gives the patient a more satisfied feeling. Eating bulky foods, such as fibrous vegetables and fruits, and large bowls of soup will also help in the same way. Both of these measures will aid in preventing constipation, which might otherwise result from overeating and inactivity. The patient should be made to understand that a serious derangement of nutrition may be brought about by clogging up the system with more food than the body can take care of.

It is common for patients—paying patients—to comment on the fact that they eat much more than they have ever done at home. It is evident that many of the private room patients in the larger modern hospitals are overfed, as they are served an adequate menu by the house and are given many extras by their friends. If they fail to consume all of this food, their condition is considered by these friends more or less serious, and they bring a greater variety of things in order to tempt the appetite of the patient.

There are many patients, however, who, for one reason or another, do not eat a sufficient amount of food. In some instances this may be due to a prejudice against institutional food or cooking, but in more instances it may be due to the length of time the patients remain in the hospital. Their inactivity leads to a loss of appetite and dissatisfaction with the food, and efforts should be made to induce them to take sufficient nourishment in some attractive form. An effective method is to serve some new dish, or to serve food in a different manner from the usual custom—to combine the needed food materials in novel ways, and to give the meal in the nature of a surprise. Even well people enjoy the pleasures of anticipation of food, and this is far more true of the sick. Almost invariably patients enjoy a meal more if there are elements of expectation and surprise connected with it, which is one reason for not having routine menus—a particular thing on every Monday, another on every Tuesday, and so on. Neither is it well to discuss the menu with the patient; an observant nurse can soon learn the food a patient will not eat, and avoid serving the things which are distasteful to him.

This phase brings up the question of "special orders" for patients—to just what extent shall the whims of a patient be gratified and just how much latitude can be

given his wishes? Not only should the line be drawn, but there should be a complete disregard of two prevailing reasons given for special orders in many of our hospitals—namely, "My patient is paying seventy-five or one hundred dollars (as the case may be) per week, and is thereby entitled to these little extras," and "The doctor said he could have anything he wished." These demands are being met in each hospital according to its conditions and resources, but they are entitled to no consideration anywhere. This state of affairs shows plainly another need of cooperation between the physician and the dietitian.

The Whims of Private Patients.

At Lakeside Hospital the special orders have been reduced to a minimum in the private and semi-private wards by preparing a menu which gives a rather wide variety of food. For example, for breakfast there is a choice of fruits, two cooked and two "prepared" cereals, bacon and eggs, toast, rolls, and at all meals any of the common beverages may be chosen. For dinner there is a choice of a clear soup or a cream soup; a roast meat or steak, or eggs in any form; a baked potato or one prepared in some other way; two other vegetables; a salad; a frozen dessert, or some other kind. The menu is varied as much as possible, so that there shall be no monotony in the diet. If the patient still desires something which requires extra preparation, an extra charge is made for it. It is not often that a patient cannot select enough from this menu to give him a satisfactory meal, even though there are some things being served for which he does not care.

The number of servings required in each ward is reported to the dietitian, and she posts it on a bulletin board in the kitchen, so that the cooks know just how

much is to be prepared. This type of menu makes a little more work for the dietitian and the kitchen force, but not a great deal more than would be necessary in the preparation of many special orders. It has the advantage of giving every patient the same privilege, while by the other method the number of "extras" a patient gets depends about as much on the kind of a nurse he has as it does on his actual requirements.

Feeding Maternity Patients.

As a rule, maternity patients have very good appetites, and with them, too, there is sometimes a tendency to overeat. This desire for large servings, or frequent serving, has been explained occasionally by the statement that they must eat a great deal because they are eating for two people, though just how or why this should be the case the writer has never been able to learn.

There has been a theory in the past that a mother should not eat acid foods or foods with a strong flavor during the early period of the child's nursing, but it has been very satisfactorily proved that the child is not affected by the diet of the mother so long as she confines herself to the things which for her are easily digested, and there need be no change in her method of eating, provided her powers of assimilation are good.

Feeding the Interns and Nurses.

Is it making too strong a statement to say that probably nowhere in the world will one find a class of people more critical of their food or more difficult to please than nurses and interns? There are some very good psychological explanations of this, but the critical attitude of these people remains much the same, and the condition seems to be pretty general in hospitals throughout the country. These persons almost invariably enjoy the food

when they first enter the hospital, but sooner or later add their complaints to those of the earlier comers. Undoubtedly there are some instances where complaint is justified, but usually the food in the hospitals is as good in quality and as great in variety as is to be found in the homes of people in a similar walk of life.

Much depends, of course, on the resources of hospitals, but it must be remembered that the food is cooked in large quantities, and must be cooked long enough before serving to allow time for it to be transferred to carriers of some sort, taken some distance, and made ready to serve to a number of people, and it is not possible to give to it the same characteristic flavors that may be acquired in a home where practically no time elapses between the cooking and serving processes. Then, again, where there are so many tastes to which to cater, only neutral seasonings and mild flavors can be used.

Hospital people work hard and meet great demands on their physical force, and should have food which will rebuild tissue and furnish energy. Their work is indoors, however, so their power of oxidation is not so great. The nature of their work and their environment unfit them for digestion of concentrated or heavy foods, or of much fat, and for this reason meat three times daily, though that is one of the most common demands, is not desirable, and rich puddings or pastry should be given sparingly. The mode of life of the hospital resident is conducive to constipation, so that fruits, green vegetables, and salads should be served as much as possible. Now that there are good brands of dried, preserved, and canned fruits which may be made most palatable, fruit is not beyond the reach of any hospital. Apples, bananas, dates, and figs are not expensive, and make splendid combinations with cereal for breakfast, or may be used in salads, or in desserts for luncheon. Apples and bananas, when baked

or fried, may serve in place of a vegetable, or may be inexpensively made into fritters. Some years oranges and grapefruit are so moderate in price that the fruit question is an easy one.

Cereals, including rice, macaroni, and spaghetti, are staple hospital food materials, but are generally scorned. They are, nevertheless, desirable substitutes for meat, not only because they cost less money, but because they have much food value, are easily digested, and furnish bulk, which indoor workers need in their diet. When well cooked, they can be made very palatable, and are susceptible of so many combinations with other food materials that they give much variety to the menu.

Cream soups, purees, and chowders have high nutritive value, and are most appetizing luncheon dishes. The lighter forms of meat, like bacon, liver, stuffed calf heart, hot or pickled tongue; cheese in an almost endless variety of forms (such as fondue, creamed cheese on toast, cottage cheese salad, or cheese on potato, rice, or macaroni); macaroni and fritters, already mentioned; and the salads which lend themselves to so many ways of serving, may all be utilized to good advantage for the lighter meal of the day and are not too expensive for the hospital of limited means.

It is better, if possible, to serve luncheon at noon and dinner at night. The nurses are more fit for the afternoon work if not digesting a heavy meal while trying to concentrate on their duties. Dinner, being the main meal of the day, is the one over which we like to linger just a little, and it is highly desirable that the food be so well prepared and served that it will not intrude itself on the conversation, as it will undoubtedly do if it is not pleasing.

The nurses and doctors are entitled to the best that the hospital can afford to give them, and it is but small return for their best service which they give to the hospi-

tal. They should have plenty of food of good quality, cooked and served as well as can be done in the hospital. They, as well as the patients, base as much of their satisfaction with the hospital and their life in it on the food as on any other feature? Only when people are happy and contented can they do their best work. We may not in our time reach the point of feeding the people in a hospital to their satisfaction or to our own satisfaction, but we should do the best with all material available; and even though we must use the same things repeatedly, they can be used in enough different ways to prevent monotony. It is, indeed, disheartening to look ahead for a year and know that one is to have the same thing every morning, or every Monday or Wednesday, during the whole stretch of time; nor is there any economy in that method, as it leaves scant opportunity to utilize stock on hand. There will always be food in the ice box or store room which cannot be held until the prescribed day for it to be used.

Feeding the Hospital Help.

Then there is the problem of feeding the "help" of the hospital. The chief difficulty in feeding these people is convincing them that the authorities are interested in their meals as well as in the other food of the hospital. When they know that the selection and preparation of their food is given care, and that they are not receiving only that which is unavailable for the other people, they are not likely to make complaints. It is a great mistake to allow much to be left over from other parts of the house and to use it up on the help. In the first place, this is extravagance; in the second place, it gives the help the impression that they are being fed on "scraps."

The help must have plain, substantial food and plenty of it. They do not care for "fancy dishes," and, as a

rule, do not demand as much variety as the other inmates of the hospital. This does not mean that they may be given the same things again and again day after day, but a reasonable amount of variety is usually satisfactory.

Making Out the Menus.

In the making of menus there are many things to be considered which, to an outsider, may seem of minor importance, but which count for much in getting out meals. Everyone recognizes the fact that the buying must be governed by the funds available for the commissary department, but not everyone is familiar with vast differences in markets, their methods of filling orders, and their facilities for delivering. The length of time to be allowed in advance of making out menus depends almost entirely on the market's delivery system. The number of employees in the kitchen and their competency modifies the menu very much, as does also the kind of equipment in the kitchen. Naturally, the better manned a kitchen is the more effectively can the work be done, and it is no economy to employ an unskilled cook at a low salary. The best results cannot be obtained when the kitchen force is so limited that everyone is working up to the limit of his capacity all of the time. In no other part of the house are the hours as long as in the kitchen, or so rigid in that the work must be done by a certain time every day, with no possibility of leaving some of it over for another day; yet it is very seldom that the kitchen department is given the same consideration and its system or regulation shown the same respect as is accorded other parts of the house.

Food Carts.

Another problem which seems almost to have baffled solution thus far is the conveying of food from the

kitchen to the various serving pantries in such a manner that the hot things will be hot and the cold things will remain cold, and everything be in proper condition when it reaches its destination.

There are food carts with devices for keeping food hot by means of hot water compartments or other heating devices, but these do not provide for foods being kept cold; besides, they are very heavy, even when empty, and when loaded with food are often too much for one person to manage. The German Hospital in New York city has a cart with compartments for different foods and for the necessary dishes, which is taken into the ward, and, instead of serving from a pantry, the serving is done from the cart with a minimum handling of materials, with no waste of time in the ward. This arrangement, however, necessitates a cart for every ward and a very efficient elevator service, and there will be some complications in getting these carts filled and out of the kitchen unless the arrangement of the kitchen space is well adapted to the use of the large number of carts.

If a cart should be built with compartments for both hot and cold foods, with insulated partitions or shelves between, simple in construction and with few complicated parts to get out of order, and light enough to be drawn by one man, it would fill the needs. A cart which has these insulated shelves and compartments for hot and cold food is manufactured, but it is built only in connection with and for use on an electric motor truck made by the manufacturers of the car. The price is $1,200, so that its use would not be practicable unless it could be employed for delivery in all departments, as not many hospitals would feel justified in spending that sum for the delivery of nothing but kitchen supplies. Food containers of heavy pressed tin, or copper, or aluminum, with insets of the same material and devices for surrounding these in-

sets with hot water, are perhaps as satisfactory for keeping food warm as anything in general use. These containers, when sent out in closed carts, will keep food hot for a reasonable length of time, but they are disastrous to gelatins or salads that happen to be sent out at the same time, as is usually necessary.

Food Containers.

The sooner we can eliminate copper from our kitchens, the better it will be for our cooking. It is expensive, not only because of the initial cost, but the frequent retinning it requires adds very considerably to its expense. Because of the short time the retinning remains safe, as well as of the cost of the process and the time required for the utensils to be out of use, one can almost always find copper being used which is not sanitary if a very great supply of copper is used at all in the kitchen.

Aluminum is no more expensive in the end, and has the advantage of remaining in good condition indefinitely, provided, of course, that a good grade of aluminum is bought and that it receives reasonably careful treatment.

The food containers above mentioned made of aluminum in sizes corresponding to the number of patients to be fed in the ward meet practically every need. An outside container, or box, is made large enough to hold insets for meat, potato, and one other vegetable. A rack which stands 1 to 1½ inches above the bottom of the box serves as a platform upon which these insets rest. Hot water is put into the box, which does not come above the rack. This hot water not only keeps the food from becoming cold while being carried to its destination, but it also serves as a hot water bath in which the food is kept hot during serving. The box may be placed over the gas flame in the serving kitchen on the ward, and there is no danger of the food burning or becoming dry. In addition

to their other advantages, these boxes are easily kept clean and are attractive in appearance.

These food containers are better in the serving pantries than a steam table, provided there is stove space enough to permit of their being placed over a flame. Time is lost in transferring the food to the steam table insets, and the extra handling detracts from the appearance of the food. Serving pantries are usually small, and the heat from the steam table makes the room very uncomfortable for those doing the serving; then, too, the warm, moist atmosphere of the room makes it impossible to allow the salads and cold desserts to remain in the room even during the serving time, and not many serving rooms have sufficient ice box space to accommodate these things. It would be very convenient to have one section of the refrigerator built with many shelves just far enough apart to permit dishes filled with salad or dessert ready to serve to be placed on these shelves and taken out only as needed. All too many ice boxes do not have enough shelf space, but do have too much waste space between the shelves.

Serving Pantries.

Serving pantries should be provided with shelves or racks with space enough to permit all trays to be set with the necessary dishes before serving begins. The more expeditiously the serving can be done, the more palatable will be the food. With the trays all set and the cold things all served and in the ice box, the process of getting out the trays can be made a very simple one. With some patients the appearance of the tray may determine whether the food will be eaten. It is a common error to serve too much on a tray, which is repulsive to some patients, and the majority of them are not in a condition to digest large amounts of food. It is far better to give dainty servings, with the understanding that more may be had

if desired. The question of economy is no small one when two hundred or three hundred people are being served and the large majority of them are served more than they can eat. This same question of economy applies to the preparation of egg-nogs and orangeades and the heating of broths and gruels. The amount needed should be measured out before preparing, leaving none to be thrown into the sink, as is too frequently done. Such things as these are the cause of the divergence of opinion between the kitchen and the ward with regard to quantities needed.

Diet Training for Nurses.

The nurse's training in dietetics comes into use when she does the serving in the wards, and it is unfortunate if she has not had her diet kitchen training before she does any serving. This training enables her to give much better service to the patients and to the hospital, and it is quite essential where there are many special diets to be served.

It is only by keeping in close touch with the various wards and knowing the needs of each that the dietitian can give the best service to the patients with a minimum of work in the serving pantries, and without overtaxing the working capacity of the kitchen. In order to keep expenses as they should be, she must have full knowledge of the store rooms and the markets.

Though there may be a very rigid system regulating requisitions for supplies in other parts of the house, the general impression in the average hospital is that the kitchen is managed on the short-order restaurant plan and that anything desired should be obtainable at any time desired. The recognition of the commissary department as an organized part of the whole scheme, with which almost every other department is more or less intimately connected, is so recent that we hardly realize that

it exists. With this recognition is coming a demand that the department be placed on a higher plane, and a higher standard is being set for the person in charge, whether he be cook or dietitian.

UNIV. OF CALIF. MEDICAL DEPT.

CHAPTER XV.

FEEDING VARIOUS INSTITUTIONS.

CATERING TO THE TUBERCULOUS—FEEDING THE CHILDREN—THE INSANE HAVE THEIR OWN PROBLEM—BUYING FOR AND FEEDING ELEEMOSYNARY INSTITUTIONS—FEEDING PRIVATE SANATORIUMS—HELP IN THE KITCHEN—DIETETICS OF THE FUTURE.

Professor Mendel, of Yale, says, "Among the modern sciences that bear on the every-day life of men, there are few which appear to meet with so little popular recognition as does the science of nutrition." This is very true in general, and more conspicuously true in our hospitals and other institutions where, in other departments, scientific work is not only recognized, but regarded as necessary. The large majority of our hospitals have until recently given very little thought, effort, or money to the planning or equipping of their commissary departments, and even now it is only a few that have done so. Visitors, or those who for any reason wish to see the hospital in its entirety, or to observe the scheme of working in its several departments, are very seldom shown the kitchens. There is usually plenty of reason for being ashamed of the kitchens, but there is not a good reason why this state of affairs should exist.

Institutions are known by the manner in which they prepare and serve food, just as individuals are known by their reputations for efficiency and morality. It is surprising that there are as good results in the feeding of hospitals as are obtained when the commissary department receives such indifferent attention. No one questions the importance of good food in a hospital, but very few have any conception of the difficulties to be over-

come in serving good food. The difficulty of cooking with a defective stove or oven when feeding a large number of people at a specified hour, three times every day, cannot be imagined by one who has never been through the experience. Psychologists tell us that persons employed about furnaces, large ranges, or places where they work in a high temperature, "are likely to become unstable in their disposition and intemperate in their habits." When, in addition to this, they are subjected to the annoyances of improper utensils or inadequate equipment, how much greater must be the effect on their disposition and habits, and, incidentally, on their efficiency? Food which is overcooked, undercooked, or unevenly cooked is not palatable, and much of it is not easy of digestion, and this fact may result in great waste, which in time amounts to more than the price of a stove, not to mention the dissatisfaction that sort of food creates.

Adequate refrigerator space is very necessary to keep food at its best, and all the more necessary where such large quantities are used that a long time is required for its preparation, which is done in a room at a comparatively high temperature. Artificial refrigeration has reached such a stage of perfection that even small hospitals find its use advantageous. Good equipment and intelligent cooks are essential in the proper feeding of every institution, whether it is large or small, of limited means or well endowed, though the kind of food, methods of storing, and the cooking and serving are extremely variable in different institutions for people of the same class.

In a state or county institution the supplies are bought by a purchasing committee, usually at a per capita rate, for three months or six months at a time. As everything is bought in such large quantities, it can usually be bought at lower prices and there is little excuse for purchasing goods of poor quality. Since they are to be kept

for some time, it is not good policy to buy anything of poor quality. A large, dry, well-lighted, well-ventilated store room should be provided for the supplies. While this method of buying makes it more difficult to have a great variety on the menu, it affords splendid opportunity for systematic control of the whole food problem; but if it is not well controlled, there is great opportunity for waste. More or less waste is unavoidable from vegetable decay, shrinkage in the store room due to the large amount which must be kept on hand, or carelessness in the kitchen and store room. The majority of the people working in the kitchens of our institutions become so accustomed to seeing great quantities of food that they do not have the proper respect for small quantities, and to them a quart of milk or a pound of meat is a trifling matter. This is a common attitude of nurses toward hospital property, and it is even more common in the kitchen force.

In the report of the dietary studies carried on in the institutions of New York city it was stated that the kitchen force became interested in the experiments, and a definite effort toward improvement was especially noticeable in cooking and caring for supplies in both the kitchens and dining rooms; the influence of this interest on the chef and cook being most beneficial. This result can be attained in any institution, and is particularly desirable in the smaller hospitals whose means are limited.

In feeding the insane it is frequently necessary to regulate the amount of food allowed individuals, as otherwise some patients would eat more and others less than they need. It may not be necessary to regulate the amount of food eaten by the sane, but in many instances it is advisable. The caloric method furnishes a pretty accurate estimate of the requirements of the average body, but it does not deal with the requirements of the individual. The

averages furnish, however, a very reliable guide to the metabolist. There is a vast deal of work necessary in introducing this method, but, once established, it is comparatively simple.

A great many institutions of all kinds are estimating per capita cost. This is an excellent plan for obtaining general information and for comparison, but it cannot be taken as a standard. Such common food stuffs as butter, eggs, and meat vary so greatly in price from year to year in different sections of the country that the same amounts might not be equally feasible in the East and in the West, and in one year a given sum might not buy nearly as much as it would in another. It is possible to have a generous per capita cost and at the same time to feed the people in a very unsatisfactory manner because of waste, lack of proper vision of food stuffs, injudicious serving, or fluctuating population.

The per capita ration is a very satisfactory method of estimating the quantities of food stuff required. The ration differs according to the people who are being fed, and the allowance for the patients would not be the same as for the people working, but the menus are never the same for the two classes of people, so that it is easy to have the two estimates. The allowance for one hospital might not be at all satisfactory in another, and therefore a table of quantities could not be used generally, any more than one of per capita cost could. It is, however, the most accurate system with which the writer has had experience in providing quantities, and there is less waste and fewer left-over things of which to take care.

These are a few of the general problems that apply to any kitchen in which the food must be prepared in large quantities, and there are, of course, many specific conditions to be met in each individual commissary department.

Feeding the Tuberculous.

In tuberculosis hospitals the food should be furnished in smaller quantities and given more frequently. The patients must have not only enough food to nourish them in the normal way, but there must be enough to repair the damage done by the ravages of the disease. The food must be wholesome and the food materials in good condition, and no green or overripe fruits or vegetables should be used. The milk should be clean and free from contamination of any sort up to the minute the last of it is used, and should test not less than 3.4 or 3.5 percent of fat. Milk and eggs are used for tuberculous people in comparatively large quantities, and it is especially desirable that they be carefully selected and cared for. No matter how good milk and eggs are, the patients are apt to tire of them; and it is not necessary that they constitute the chief part of the diet, though they must be used generously because of their high nutritive value and ease of digestion. Other foods may be used freely to supplement the milk and eggs; green and fresh vegetables cooked with plenty of butter or cream sauce, or served with oil, furnish mineral salts, fat, and the bulk which is helpful in preventing constipation. Cereals well cooked and served with milk, cream, or butter are an excellent food for tuberculous patients. Unpolished rice might well be used much more than it is; it has a nutty flavor which makes it more palatable than the polished rice, and is therefore more acceptable, and it has greater food value. The acids of fruit are stimulating to the digestion and the sugars add to the caloric value of the diet. All food should be simple—no rich puddings or pastries, highly seasoned food, or combinations of sauces, wines, etc. It should be cooked in a manner that will make it easily digested and assimilated, in order that the digestive organs may not be taxed and that the body may not lose

any of the food value. The tuberculous patient should not eat large quantities at a time, as his comparative inactivity does not allow him to get the greatest good from his food if taken in this way and his digestive organs are apt to suffer. Light lunches, or some form of nourishment in the middle of the forenoon and afternoon, are much better for him. In the hospital where insufficient funds or lack of help makes these luncheons impossible, a glass of egg-nog, a bowl of bread and milk, a cup of cocoa, a dish of junket, a plate of dates or figs, or raisins, may be served at small expenditure of time and money, and any of these is a helpful addition to the patient's diet.

Feeding the Children.

Children's hospitals need a dietary similar to the one just outlined, except that vegetables and fruits should not be served in the form of salads. For the younger children all vegetables and fruits should be made into purees, strained, and meats should be chopped; but the older children should be given things which require chewing and should be taught to masticate them thoroughly. As in the tuberculosis diet, the food should be simple, plain, and thoroughly cooked; milk and eggs are necessary, and even more of the cereals, gruels, cream soups, etc., are desirable. With the children, too, serving smaller quanties and serving more frequently is essential.

The question of infant feeding is usually one that is decided by the physician in charge, and the preparations are apt to be according to formulas furnished by him. Milk may be modified in many ways, with definite proportions of fat, sugar, and protein according to formula, or with lime water or barley water in order to prevent the clotting of the casein into curds that are difficult for the digestive juices to break up. Barley has glutinous prop-

erties, which make it especially good for modifying milk. Chymogen milk is milk that is sterilized and then cooled to a temperature of about 104° or 105° F., and to which chymogen powder is added to coagulate the casein; the curd is then beaten until the clots have all disappeared. Care must, however, be taken not to heat the milk above 98° F. before feeding, or the finely divided particles will again form a clot. Chymogen action is much the same as the digestive step in the stomach caused by the action of rennin, and the separation of the curd by beating merely helps the action a little more. Peptonized milk and eiweissmilch are other forms much used in infant feeding.

Feeding the Insane.

The hospital for the insane has a somewhat different problem. While the food of the insane must be plain and have a high nutritive value, there are some complications in serving not to be found in other places. The need for well-prepared and attractively served food is just as great here as elsewhere. It is difficult with many of these patients to persuade them to masticate their food properly, and epileptics and the demented are inclined to bolt their food. Supervision of the dining room is almost imperative to overcome this difficulty, as well as to prevent wasteful serving, and to see that some are not overfed. As a rule, the depressed and oversensitive eat too little. It is important that the dining room be well ventilated at the meal hour and that no disconcerting sounds or disagreeable odors reach the patients, as there are nearly always some who are likely to be affected by these external conditions more than rational persons. They may have delusions about their food which are difficult to overcome and which cause them to refuse to eat. There seems to be as yet no very satisfactory solution of the problem of feeding the demented who cannot be trusted

with knives and forks. All too frequently their food is put into any sort of container that the hospital finds convenient and of little value if destroyed. Some infirm patients, because of their inability to masticate, may be able to eat only vegetables and fruits that have been strained, meats that have been chopped, and soups and other soft things. Their diet must necessarily be monotonous, and there is all the greater need that it should be well cooked.

Feeding Charity Hospitals.

In the state, county, or municipal institutions, where the supplies are bought by a committee not directly associated with the hospital, and are to last for a period of several months, it is helpful, provided the population is not too variable, to use the per capita ration as a basis in making out the order. In these hospitals it is imperative that there should be intelligent and judicious supervision of the commissary department, as otherwise, toward the end of the period for which supplies are purchased, there will be a shortage of stock. Supplies should be given out only by requisition, and there should be a definite system of drawing on them, so they may be used with approximate uniformity.

A very satisfactory method of attending to this matter of supplies was followed at Oak Forest Infirmary, Chicago. Menus were made out for three weeks, allowing for as great a variety as possible during that period. These were repeated, and any desirable change was made from time to time in minor things, such as fresh vegetables and fruits, as they came in from the farm or were ordered. In this way perishable articles could be used as they were delivered, but meats and other things for which time was required in ordering could be kept in supply as needed. The butcher had a copy of the standard menu, knew whether the menu for the first, second, or

third week was being used, and could order his stock accordingly. This avoided a repetition of any one article on the same day of each week, and the supplies in the store room were drawn on according to the quantities available, thus making things come out even.

In institutions of this kind the fare must necessarily be less expensive and of less variety than in private institutions, as in the latter there is especially great need for a cook who can cook well and introduce variety in the way of seasonings or combinations of common food materials.

Feeding the Private Sanatorium.

In the private sanatorium and hospital the need for a heavy, nourishing diet is not ordinarily so great as the need of an attractive, appetizing one. While many of the patients must be "built up" and must have nutritive food, they require greater variety, dainty service, and generally less in quantity. Proper combinations of food, served, as far as is possible in a hospital, in a novel and original manner, are most important. This does not mean that better cooks should be employed, for it is just as essential that the plainer foods should be as well cooked as the more delicate ones, but it means a greater number of employees. A small touch in the way of garnishing, or a tiny bit of an appetizing sauce added to a vegetable, salad, or dessert, may represent an addition of considerable work in the preparation of that particular dish. High-class restaurants and hotels make much of these extras, and the public has been taught to expect them, but these places provide every sort of machine or device for the preparation of fancy things, while in the majority of hospitals it requires all one's power of persuasion to get the necessary utensils and equipment for such work. There is a strong tendency to overdo garnishing

and decorating, and often the efforts to lend a pleasing note have completely overshadowed the preparation of the article itself. To a sensitive person this is most displeasing, and private sanatoriums entertain many sensitive and even supersensitive people. Besides the extravagance of this habit, it sometimes leads to the substitution of a less nutritive food material for one of greater value. For example, a large leaf of lettuce may be used with a small serving of salad; the lettuce has much less food value than the majority of salads served on it, and the large green leaf, being out of proportion to the other part of the serving, detracts from the daintiness of its appearance.

In order to serve its principal purpose, a sanatorium must be more or less remote from large cities, and consequently it cannot have access to large markets. Unless, therefore, the sanatorium has its own source of supply, one's ingenuity is severely taxed to provide the desired variety. As, however, the serving is done in a dining room, the situation is not so serious as it might be otherwise. One can often combine small amounts of meat, fish, or poultry into chowders, omelets, or casserole dishes; or, with vegetables, make them into ragouts; and, with the addition of white sauce, cream soups and bisques may be made from them. Vegetables and fruits may be used in fritters, and salads and souffles can be prepared in a large number of combinations. These things are possible where the service is almost directly from the kitchen and the serving is at a table.

Help in the Sanatorium Kitchen.

In the sanatorium kitchen the problem of help is different from that of the kitchens of other institutions, as either the civil service requirements or inmate help, or both, complicate matters. There are often times when

the force is weakened by the absence of some of the number, but the meals must go out promptly, and the meal hour in all large institutions extends over a considerable length of time, so that there is little spare time between meals. Under civil service rules no employee may be made to work an extra hour, no matter how great the need. The work in the kitchen begins at half-past 4 or 5 o'clock in the morning, and may not end until 7 o'clock or later in the evening, so that it is very necessary that enough people are employed to allow for relief.

The question of inmate help will not be considered here from the standpoint of the institution or from the standpoint of other departments, but from the viewpoint of the kitchen. Inmate help is not competent, of course, and, with the exception of the preparation of vegetables and fruits or doing some part of the cleaning, there is very little about the kitchen that should be left to such help. Infirm people cannot work rapidly enough to accomplish much in the kitchen, and frequently they are not cleanly about their persons or habits, and should not work near the food. Very few of them do any work about the culinary department well, as it is work with which, as a rule, they are not familiar.

The Feeding of Industrial Workers.

A service that modern industrial corporations have set for themselves in connection with the general welfare of their employees is the midday meal, served sometimes as a cafeteria luncheon and sometimes as a regularly served meal, in which waitresses, napery, and full table service are employed.

While it might be conceived that the discussion of such a topic in a volume on diets for the sick is not appropriate, yet, when we think seriously of the matter, it is a fair presumption that the same principles of food and

feeding are equally important for the well and sick, and that they apply equally for both classes. If foods and feeding are among the most important factors in restoring to health those who are ill, they are equally important in the maintenance of the health of those who are well and at work.

Workers in the industries are not always the best judges of appropriate foods, taking their employment and their environment into account, and hence those who are concerned for the health of their employees are greatly interested in the materials that go into the feeding problem and the manner of their preparation and service.

The midday luncheon in the factory is something more than the mere satisfaction of the appetites of those who partake; it is the sustaining and building-up process by which workers are kept up to the best that is in them—not only for their working hours, but in order that their lives may be happier and healthier, and that they be better and more useful citizens, and that their children shall inherit stronger vitality and better constitutions.

Some corporations have gone into these matters more deeply than others. One of the foremost in this work—a work that has received national recognition—is the National Lamp Works, of Cleveland, Ohio, one of the auxiliaries of the General Electric Company. This corporation has worked for several years in many directions looking to the health of industrial workers, not the least productive of which has been in food studies and feeding service. The company has evolved into actual practice some theories that deserve universal study and more general emulation.

Below are some of the food types it serves its employees, with methods of preparation, and at the end the reasons for what it does in terms of nutrition.

Split Pea Soup.

Quantity	Ingredients	Calories derived from protein	Total calories
4	quarts...split peas (8 pounds).....	3,571.2	12,896
9½	gallons..water	.....	.....
1	quart....onions (1 pound 2 ounces).....	28.57	224
1	tablesp..baking soda.....	.....	.....
2	gallons..milk (16 pounds).....	957.44	5,024
2½	cups....flour (10 ounces).....	127.2	1,002
2	pounds..fat (1 pound butter and 1 pound oleomargarine)	36.32	6,976
2	teasp....pepper	.....	.....
½	cup .....salt	.....	.....
	128 portions.....	4,720.73	26,122
	1 portion.....	36.88	204

Pick over and wash the peas, add the water, and soak overnight; add the onions and baking soda; cook gently (or in a double boiler) in the water in which the peas were soaked; when the peas are soft, press them through a strainer, using a potato masher; heat the milk in a double boiler; heat the butter and oleomargarine in a large saucepan or kettle; stir with a wooden spoon; do not brown the fat. When the fat bubbles, add the flour and seasoning (which have been mixed together); stir until perfectly smooth; add a portion of the hot milk, stir constantly, and cook until the mixture thickens; then add another portion of the hot milk and proceed as before; add this to the strained peas and heat until boiling; add more seasoning if necessary. Serve hot. A ham bone may be cooked with the peas.

Vegetable Soup.

Quantity	Ingredients		Calories derived from protein	Total calories
10 pounds	soup bones			
⅓ cup	salt			
1 teasp.	peppercorns	40 lbs. soup stock	262.16	6,800
5 gallons	water			
5 pounds	lean beef			
1 gallon	water		2,141	7,795
3 pounds	pearled barley			
3 gallons	water		462.6	4,830
2 quarts	carrots (3 pounds)		48.96	477
2 quarts	turnips (3 pounds)		48.96	372
2 quarts	onions (2¼ pounds)		57.15	447.75
1 head	cabbage (small, 2½ pounds)		63.5	301.5
2 quarts	tomatoes (4 pounds)		87.04	412
4 quarts	potatoes (7½ pounds)		244.8	2,280
	128 portions		3,416.17	23,715.25
	1 portion		26.6	185.27

Use soup bones, salt, peppercorns, and water to make soup stock; clean the bones, cover with 2½ gallons cold water, add seasoning, and cook at simmering temperature for six or eight hours; drain off the stock; add 2½ gallons more cold water; cook at simmering temperature for one-half hour; drain into the "first" stock; let it stand in the refrigerator until needed; before using, remove all fat. Chop the meat (before or after cooking), add one gallon cold water, and cook at simmering temperature until tender. Cook the pearled barley in water until tender; wash, pare, and cut vegetables by passing through the coarsest knife of a meat chopper; cover with boiling water and cook until tender; add to soup stock cooked meat and barley; add more seasoning if necessary. Serve hot. Substitute rice, macaroni, or spaghetti for the barley.

Potato Soup.

Quantity	Ingredients	Calories derived from protein	Total calories
½ bushel	potatoes (30 pounds)	979.2	9,120
4½ gallons	water (including water in which potatoes were cooked)	.....	.....
4½ gallons	milk (36 pounds)	2,154.24	11,304
1 quart	onions (1 pound 2 ounces)	28.57	224
1½ pounds	fat (¾ pound butter and ¾ pound oleomargarine)	27.24	5,232
4½ cups	flour (1 pound 2 ounces)	228.6	1.803.4
1½ cups	salt	.....	.....
1½ tablesp	pepper	.....	.....
3 tablesp	celery salt	.....	.....
2 cups	chopped parsley	.....	.....
	128 portions	3,417.85	27,683.4
	1 portion	26.7	216.2

Wash and pare the potatoes; cover with boiling water and cook gently until tender; mash the potatoes; chop the onion; heat the onion and milk in a double boiler; make a sauce of the fat, flour, seasoning, and hot milk (see split pea soup); add the mashed potatoes, stir until perfectly smooth; heat the mixture until it boils; add the chopped parsley and, if necessary, more seasoning. Serve hot.

Bean Soup.

Quantity	Ingredients	Calories derived from protein	Total calories
7½ quarts	dried beans (15 pounds)	6,123.6	23,460
12 gallons	water	.....	.....
2 teasp.	baking soda	.....	.....
1 quart	onions (1 pound 2 ounces)	28.57	224
½ cup	dried celery leaves or celery salt	.....	.....
	cayenne	.....	.....
4 teasp.	pepper	.....	.....
½ cup	salt	.....	.....
1 tablesp.	mustard (dry)	.....	.....
2 cups	flour (½ pound)	101.6	801.5
2 pounds	fat (1 pound butter and 1 pound oleomargarine)	36.32	6,976
	128 portions	6,290.09	31,461.5
	1 portion	49.14	245.8

Soak the beans overnight in water; drain excess of water; then add fresh water, baking soda, sliced onions, and celery leaves; slowly cook the beans until they are very soft; press the beans through a strainer, using a potato masher; heat the butter and oleomargarine in a large saucepan or kettle; stir with a wooden spoon; do not brown the fat. When the fat bubbles, add the flour and seasoning, which have been mixed together; stir until perfectly smooth, add a portion of the strained bean mixture, stir constantly, cook until it thickens; then add another portion of the strained beans and proceed as before; after the last portion of strained beans is added, allow the soup mixture to reach the boiling point, add more water and salt if necessary. Serve hot.

Cream of Tomato Soup.

Quantity	Ingredients	Calories derived from protein	Total calories
4 gallons	strained tomatoes (32 pounds)	696.32	3,296
¾ ounce	baking soda	.....	.....
6 gallons	milk (48 pounds)	2,872.32	15,072
2 pounds	flour	406.4	3,206
2 pounds	fat (1 pound butter and 1 pound oleomargarine)	36.32	6,976
1 cup	salt	.....	.....
1½ tablesp	pepper	.....	.....
	128 portions	4,011.36	28,550
	1 portion	31.34	223

Heat the tomatoes to boiling point; add the baking soda, stir; keep the tomatoes hot; heat the milk in a double boiler; make a sauce of the fat, flour, seasoning, and hot milk (see split pea soup); keep the sauce hot; just before serving remove both the tomatoes and the sauce from the fire; blend the ingredients. Serve at once.

Cream of Bean Soup.

Quantity	Ingredients		Calories derived from protein	Total calories
10 pounds	soup bones			
⅓ cup	salt			
1 teasp.	peppercorns	soup stock	262.16	6,800
5 gallons	water			
5 pounds	meat—lean beef			
1 gallon	water		2,141	7,795
1½ pounds	dried beans		612.36	2,346
1 teasp.	baking soda		.....	.....
3 gallons	water		.....	.....
½ cup	salt		.....	.....
1 teasp.	pepper		.....	.....
3 gallons	milk (24 pounds)		1,436.16	7,536
1½ cups	flour (6 ounces)		76.32	601.2
1½ pounds	fat (½ pound butter and 1 pound oleomargarine)		27.24	5,232
3 tablesp.	Worcestershire sauce		.....	.....
	128 portions		4,555.24	30,310.2
	1 portion		35.59	236.8

Prepare the soup stock and meat (see vegetable soup); soak the beans overnight in water; drain excess of water; then add the fresh water and baking soda, and cook slowly until the beans are very soft; press the beans through a strainer, using a potato masher; heat the milk in a double boiler; make a sauce of the fat, flour, seasoning, and hot milk (see split pea soup); add the strained beans, cooked meat, and soup stock; heat; if necessary, add more seasoning. Serve hot.

Cocoa.

Quantity	Ingredients	Calories derived from protein	Total calories
4	cups.....cocoa (1 pound).....	391.92	2,256
4	cups.....sugar (2 pounds).....	.....	3,628
1	gallon...water (2 quarts cold water and 2 quarts boiling water).....	.....	.....
3	gallons..milk (24 pounds).....	1,436.16	7,536
4	teasp....salt (level).....	.....	.....
	128 portions.....	1,828.08	13,420
	1 portion.....	21.5	157.9

Mix cocoa and cold water; boil gently for thirty minutes, stirring occasionally; heat the milk in a double boiler, then add the sugar and the cooked cocoa mixture to it; heat for thirty minutes; do not remove the scum; before serving, add the salt, and beat surface with a Dover egg beater. Serve hot.

Egg Sandwiches.

Quantity	Ingredients	Calories derived from protein	Total calories
4	loaves...sandwich bread (128 slices)....	1,792	12,800
32	.....eggs (4 pounds).....	863.68	2,380
3	tablesp...salt	.....	.....
¾	cup.....butter	6.72	1,307.4
	cayenne	.....	.....
4	teasp....dry mustard.....	.....	.....
1	tablesp...vinegar	.....	.....
	64 sandwiches.....	2,662.4	16,487.4
	1 sandwich.....	41.6	257.6

Place eggs in hot water; let simmer, not boil, for forty minutes; drain hot water from them, add cold water, and allow to remain in water until cool; remove the shells, chop the egg white, and mash the egg yolk; add to the prepared eggs the butter (which has been melted), cayenne, mustard, and vinegar; mix thoroughly and spread on bread.

Ham Sandwiches.

No. 1.

Quantity	Ingredients	Calories derived from protein	Total calories
4 loaves	sandwich bread (128 slices)	1,792	12,800
4 pounds	boiled ham	1,466.88	5,126.4
⅝ pound	butter	12.52	2,323.2
⅛ cup	salt	.....	.....
⅓ cup	dry mustard	.....	.....
	cayenne (use sparingly)	.....	.....
3 tabsp	vinegar	.....	.....
	64 sandwiches	3,271.4	20,249.6
	1 sandwich	51.1	316.4

Pass the boiled ham through a meat grinder; cream the butter, add the seasoning and vinegar; blend thoroughly, then add the minced ham; if necessary, add more salt. For plain ham sandwiches use ⅛ ounce butter for each sandwich (two slices bread).

No. 2.

Quantity	Ingredients	Calories derived from protein	Total calories
3 pounds	boiled ham, chopped	1,099.44	3,843
	Sauce		
1 cup	fat (½ cup butter and ½ cup oleomargarine)	9.08	1,744
1½ cups	flour (⅜ pound)	76.2	601
1½ quarts	milk (3 pounds)	179.52	942
	cayenne (sparingly)	.....	.....
1½ tablesp	dry mustard	.....	.....
4 loaves	sandwich bread (32 ½-inch slices per loaf)	1,792	12,800
	64 sandwiches	3,156.24	19,930
	1 sandwich	49.3	311.4

Make a sauce of the ingredients indicated, in the following manner: In a saucepan, melt the fat; add the flour, cayenne, and mustard and mix thoroughly; add a small portion of the milk; heat until it thickens, stirring constantly; add more of the milk, heat, and stir as before; continue until all the milk has been added. Chop the ham in a food chopper; mix with the sauce; cool and spread between slices of bread.

Cheese and Peanut Sandwiches.

Quantity	Ingredients	Calories derived from protein	Total calories
4 loaves	sandwich bread (128 slices)	1,792	12,800
1 pound	cheese	522.56	1,994
1 pound	salted peanuts	468.12	2,487
⅓ cup	vinegar	.....	.....
	salt, if required	.....	.....
	cayenne pepper (use sparingly)	.....	.....
	64 sandwiches	2,782.68	17,281
	1 sandwich	43.47	270

Pass the cheese and peanuts through the meat grinder; add the vinegar and seasoning; mix thoroughly. Cut the bread into ½-inch slices; spread generously with the cheese mixture; if not served at once, wrap the sandwiches in dry towels and then cover with towels wrung out of hot water.

Salmon Sandwiches.

Quantity	Ingredients	Calories derived from protein	Total calories
4 cans	salmon (4 pounds)	1,581.92	3,556
	Salad Dressing		
	fat drained from salmon	.....	.....
½ cup	flour (⅛ pound)	25.4	200
1 cup	milk (½ pound)	29.92	157
1 cup	vinegar	.....	.....
2 teasp	salt	.....	.....
1 teasp	mustard	.....	.....
	pepper	.....	.....
2	eggs (4 ounces)	53.92	148.8
2	lemons, juice	.....	.....
	cayenne	.....	.....
	salt, if needed	.....	.....
4 loaves	sandwich bread (32 ½-inch slices per loaf)	1,792	12,800
	64 sandwiches	3,483.16	16,861.8
	1 sandwich	54.4	263.46

Remove the salmon from the can and drain the oil into the top of a double boiler; add the flour, salt, mustard, and pepper to the oil and mix thoroughly; heat until it thickens, stirring constantly; add part of the milk, stir, and heat until it thickens; add more milk, and repeat stirring and heating until all the milk has been added; then add the vinegar and the eggs (which have been beaten); cook over hot water and set aside to cool. Remove bits of bone from the salmon; add the salad dressing, lemon juice, cayenne, and salt if needed; spread the mixture between slices of bread.

Cottage Cheese Sandwiches.

Quantity	Ingredients	Calories derived from protein	Total calories
2 quarts	cottage cheese (2 pounds)	755.2	992
1½ pints	olives (1 pound)	14.52	993
1 can	pimentos (small)	.....	.....
	Salad Dressing		
1 cup	milk (½ pound)	29.92	157
4 tablesp.	flour (1 ounce)	12.72	100.2
3 tablesp.	fat (1 tablesp. butter and 2 tablesp. oleomargarine)	1.68	326.8
1 teasp.	salt	.....	.....
½ teasp.	mustard	.....	.....
½ cup	vinegar	.....	.....
1	egg (2 ounces)	26.96	74.4
4 loaves	sandwich bread (32 ½-inch slices per loaf)	1,792	12,800
	64 sandwiches	2,633	15,443.4
	1 sandwich	41.1	241.5

Make a salad dressing of the ingredients indicated in the recipe; follow the method of making the salad dressing given in salmon sandwiches, substituting butter and oleomargarine for the oil drained from the salmon. Remove the stones from the olives; chop the olives and pimentos in a food chopper. Mix the cottage cheese, olives, pimentos, and salad dressing; spread between slices of bread. Pickles may be substituted for olives.

Sweet Sandwiches.

Quantity	Ingredients	Calories derived from protein	Total calories
3	pounds...raisins (seeded).....	141.48	4,689
1	pound....figs (dried).....	78	1,437
4	cups.....sugar (2 pounds).....	.....	3,628
½	cup.....flour (2 ounces).....	25.44	200.4
4	.....oranges, juice (10⅔ ounces)....	.....	138.6
8	.....lemons, juice and rind (12 ozs.).	.....	133.2
¾	cup.....water	.....	.....
4	loaves....sandwich bread (32 ½-inch slices per loaf).....	1,792	12,800
	64 sandwiches	2,036.92	23,026.2
	1 sandwich	31.8	359.8

Chop the raisins and figs in a food chopper; heat the fruit juice and water; put the flour and sugar in the top part of a double boiler and mix thoroughly; add the hot fruit juice and water to the sugar mixture; cook the mixture over hot water for fifteen minutes, stirring until it thickens; add the chopped fruits and continue cooking until the fruit is heated through; cool and spread between slices of bread.

Sardine Sandwiches.

Quantity	Ingredients	Calories derived from protein	Total calories
10 cans	sardines (1 dozen sardines in a can, 7 pounds)	2,920.96	8,547
1½ dozen	eggs (2¼ pounds)	485.82	1,338.7
4	lemons, juice (6 ounces)	.....	66.6
	salt	.....	.....
	pepper	.....	.....
	cayenne	.....	.....
4 loaves	sandwich bread (32 ½-inch slices per loaf)	1,792	12,800
	64 sandwiches	5,198.78	22,752.3
	1 sandwich	81.23	355.5

(For method of cooking the eggs, see egg sandwiches.) Chop the eggs in a food chopper. Remove the bones from the sardines and break the fish into pieces; add the sardines and the oil in which they were canned to the chopped eggs; add the lemon juice and seasonings; spread between slices of bread.

Energy Requirement.

The energy requirement, for an average person, exercising moderately, is 2,500 to 3,000 calories per day. Estimating one-third of the day's rations as the energy requirement of one meal, the energy requirement of a meal becomes 833 to 1,000 calories.

It has been estimated that from 10 to 15 percent of the energy requirements should be furnished by protein—i. e., nitrogenous food.

The ratio of the fuel value of protein, or nitrogenous food, to the fuel value of fat and carbohydrate, or nonnitrogenous food, is termed nutritive ratio. In formulating diets, it is helpful to have the nutritive ratio given with the total energy requirement. Expressing ratio in the form of a fraction and using "1" as the numerator, the above nutritive ratio may be written as:

1/9 to 1/5.7 average nutritive ratio—i. e., for every calorie produced by protein, from 9 to 5.7 calories should be produced by fat and carbohydrate.

The above energy requirement and nutritive ratio have been taken as the basis for "Food Combinations for Luncheons." The calculations are based on the following factors:

1 gram protein yields 4 calories.
1 gram fat yields 9 calories.
1 gram carbohydrate yields 4 calories.

Food Combinations for Luncheon.

	Calories derived from protein	Total calories
1 portion vegetable soup	26.6	185.27
1 cheese and peanut sandwich	43.47	270
1 large banana	5.3	100
1 piece cake (2 ounces)	14	200
1 glass milk	7.65	150
	97.02	905.27

Nutritive ratio, 1/8.3

	Calories derived from protein	Total calories
1 cup cocoa	21.5	157.9
1 egg sandwich	41.6	257.6
1 portion ice cream (⅛ quart)	8.9	244
1 portion cake (2 ounces)	14	200
	86	589.5

Nutritive ratio, $1\text{:}8.9$

1 portion split pea soup	36.88	204
1 ham sandwich	51.1	316.4
1 portion ice cream (⅛ quart)	8.9	244
1 portion cake (2 ounces)	14	200
	110.88	964.4

Nutritive ratio, $1\text{:}7$

1 portion vegetable soup	26.6	185.27
1 ham sandwich	51.1	316.4
1 portion ice cream (⅛ quart)	8.9	244
1 portion cake (2 ounces)	14	200
	100.6	945.67

Nutritive ratio, $1\text{:}8.4$

1 portion potato soup	26.7	216.2
1 ham sandwich	51.1	316.4
1 large banana	5.3	100
1 portion cake (2 ounces)	14	200
1 cup cocoa	21.5	157.9
	118.6	990.5

Nutritive ratio, $1\text{:}7.35$

1 portion cream of tomato soup	31.34	223
3 soda crackers	9.4	100
1 ham sandwich	51.1	316.4
1 large banana	5.3	100
1 portion cake (2 ounces)	14	200
	111.14	939.4

Nutritive ratio, $1\text{:}7.4$

1 portion cream of bean soup	35.59	236.8
1 egg sandwich	41.6	257.6
1 large orange	6.2	100
1 large banana	5.3	100
1 portion cake (2 ounces)	14	200
	102.69	894.4

Nutritive ratio, $1\text{:}7.7$

	Calories derived from protein	Total calories
1 portion bean soup	49.14	245.8
2 slices bread	28	200
½ ounce butter	0.5	100
1 portion ice cream (⅛ quart)	8.9	244
1 large banana	5.3	100
	91.84	889.8

Nutritive ratio, $1/8.7$

1 portion potato soup	26.7	216.2
1 ham sandwich	51.1	316.4
1 portion cake	14	200
2 apples, medium	7.7	100
	99.5	832.6

Nutritive ratio, $1/7.4$

1 cup cocoa	21.5	157.9
1 ham sandwich	51.1	316.4
1 portion ice cream (⅛ quart)	8.9	244
1 portion cake (2 ounces)	14	200
	95.5	918.3

Nutritive ratio, $1/8.6$

1 portion bean soup (10 ounces)	49.14	245.8
1 cottage cheese sandwich	41.1	241.5
1 portion ice cream (⅛ quart)	8.9	244
1 portion cake (2 ounces)	14	200
	113.14	931.3

Nutritive ratio, $1/7.2$

1 portion bean soup (10 ounces)	49.14	245.8
1 ham sandwich, No. 2	49.3	311.4
1 portion ice cream (⅛ quart)	8.9	244
1 portion cake (2 ounces)	14	200
	121.34	1,001.2

Nutritive ratio, $1/7.2$

1 portion split pea soup (10 ounces)	36.88	204
1 slice bread	14	100
¼ ounce butter	.25	50
1 sweet sandwich	31.8	359.8
1 cup cocoa	21.5	157.9
	104.43	871.7

Nutritive ratio, $1/7.3$

	Calories derived from protein	Total calories
1 portion vegetable soup (10 ounces).....	26.60	185.27
1 sardine sandwich	81.23	355.5
1 portion ice cream (⅛ quart).....	8.9	244
1 portion cake (2 ounces).....	14	200
Nutritive ratio, $\frac{1}{6.5}$	130.73	984.77
1 portion potato soup (10 ounces).....	26.7	216.2
1 salmon sandwich	54.4	263.46
1 portion ice cream (⅛ quart).....	8.9	244
1 cup cocoa	21.5	157.9
1 large banana	5.3	100
Nutritive ratio, $\frac{1}{7.4}$	116.8	981.56
1 portion split pea soup (10 ounces).....	36.88	204
3 soda crackers	9.4	100
1 salmon sandwich	54.4	263.46
1 large orange.....	6.2	100
1 portion cake	14	200
Nutritive ratio, $\frac{1}{6.2}$	120.88	867.46

Dietetics of the Future.

In the "sphere of woman" there is no greater field for work than in the commissary departments of our modern institutions. There is much to be done, for the ground has not yet been fully prepared, and there is great need of its being done. No better laboratory for scientific work can be found, and in no place are results more satisfactory; there is pleasure in seeing a patient not only recover from effects of a disease, but learn so to control his diet in the future that there will be no recurrence of the disease. Of this type of work scarcely enough is being done as yet to deserve mention, but it sets a standard for future work in dietetics. So many people are beginning to realize the value of this knowledge, and are asking for it, that many questions must be answered while waiting for the development of this work, which is

coming "slowly but surely." It has been suggested that cooks and dining room employees take the same kind of course in dietetics as is given to nurses in some training schools.

To quote again from Dr. Mendel, this statement may be added: "In breaking away from stolid empiricism and conservative indifference in matters of diet, we need not be blind to the valuable contributions embodied in the experience of generations of mankind. But when the physiologist has succeeded in some degree in interpreting or correcting this experience, it will become the duty of the dietitian and the physician to act as advance agents in the promulgation and the application of the newer knowledge in every-day life."

CHAPTER XVI.

TRAINING SCHOOL WORK IN DIETETICS.

PRELIMINARY LESSONS—THEORETICAL AND PRACTICAL METHODS OF INSTRUCTION—TEACHING OF BASIC PRINCIPLES—CLASSIFICATION OF SUBJECTS FOR CONVENIENT TEACHING—COMPARISON OF THEORY AND PRACTICE.

In response to numerous requests for suggestions in regard to courses in dietetics to be given in hospitals, an outline is submitted covering the points which are essential for an understanding of the principles of dietetics and metabolism, and which can be utilized in the larger training schools having time for a more comprehensive course in dietetics.

In training schools of this type it is almost universally the custom to give from three to six preliminary lessons to the "probationers" soon after their entrance into the school, and, as these lessons include practical work in the serving of trays, care of food, care of ice boxes, keeping food warm, reheating gruels, etc., these matters are not discussed in the course planned.

It has been satisfactory in the majority of instances to give this classification of food principles in outline form and spend the first two periods in making it clear to the class; the more common technical terms become familiar enough to the class to prevent confusion, and the entire course is then based on this outline.

As it is almost invariably the custom to combine the class work in theory and practice, this work is so divided that, when a subject is being taught in which the theory is more important, less time is given to the practical; and, when less needs to be said on the subject, more time is given to the preparation of foods.

For example, in the lessons on vegetables, fruits, and cereals, not so much time need be spent in discussion, as their digestion, metabolism, etc., will be given in later lessons, but they should have a greater proportion of the time given to their preparation, cooking, and serving. On the other hand, as it is not possible to do any roasting or boiling of meats in so short a period of time as is given for class work, the practical work with these foods need consume less time. There is much to be said about quality, storage, and selection of meat, and the ways in which its food value is affected by these things.

For the training school giving a shorter course in dietetics, twelve lessons may be given, covering the points with less detail. In any course the basic principles should be taught. The work in theory should include all that is given in the outline, except perhaps the subclassification of carbohydrates and proteins.

In the practical work, one class period should be devoted to food and food principles; vegetables, cereals, and fruits may be combined in a second lesson; the third may be lesson V; lessons VI and VII might be condensed into one lesson, as might also VIII and IX. The review and discussion at this point is well worth the time of one class period. Fruit juices and frozen desserts are such an important part of the dietary of the sick that the work with them and the discussion of organic acids is most desirable, though, if necessary, to curtail the course further, it would be better to omit this lesson than any of the following ones, except lesson XVI. The work on leavening agents should be omitted from the shorter course. By giving the subject-matter in lessons XVII, XVIII, and XIX in two lessons, one could cover the main points of the more complete course fairly well.

In none of our dietetic courses, however, can we get the results we should have unless the class has had prelimi-

nary work in physiology, hygiene, bacteriology, and has some knowledge of the various diseases of the digestive tract. Under no other conditions can they comprehend the work in a subject which is so absolutely new to them as dietetics is to most of the classes.

Theory.

I. THE BODY.
- A. Composition.
- B. Its needs.

II. FOOD.
- A. Defined and discussed.
- B. How food meets the needs of the body.

III. THE FIVE FOOD PRINCIPLES.
- A. Defined.
- B. Source from which obtained.
- C. Function in body.
- D. Assimilation.
- E. Elimination.

IV. CLASSIFICATION OF FOOD PRINCIPLES.
- A. Nonnitrogenous or carbonaceous.
  - 1. Carbohydrates.
    - a. Polysaccharides.
      - 1. Starch—inulin.
      - 2. Glycogen.
      - 3. Dextrin.
    - b. Disaccharides.
      - 1. Sucrose—cane sugar, maple sugar.
      - 2. Lactose—milk sugar.
      - 3. Maltose—malt sugar.

c. Monosaccharides.
   1. Glucose—dextrose.
   2. Fructose—levulose.
   3. Galactose.

d. Gums.
   1. Pectose.
   2. Pectin.

e. Cellulose.

2. Fats.

a. Vegetable fats.
   1. Olive oil, cottonseed oil, etc.—liquid at body temperature.
   2. Nuts—high percent of cellulose.

b. Animal fats.
   1. Butter, cream, etc.
   2. Lard, suet, etc.
   3. Codliver oil, bile salts, etc.

3. Organic acids.

B. Nitrogenous.

1. Protein.

a. Animal.
   1. Albumin—lean meat, egg white, milk (lactalbumin).
   2. Casein, milk.
   3. Myosin—muscular tissue.
   4. Fibrinogen—blood.
   5. Nucleo protein—celnuclei, glandular organs.
   6. Vitellin—egg yolk.
   7. Lecitho protein—yolk of egg, mucous membrane, kidneys; contains lecithin (a phosphorized fat).

b. Albuminoids.
   1. Collagen—connective tissue, cartilage.
   2. Gelatin—artificial derivative of collagen.
   3. Keratin—bone, hoofs, etc.

c. Globulin—in blood.

d. Vegetables.
   1. Legumin—cereals, legumes, peanuts.
   2. Glutin—cereals, grains; sticky, tenacious.
   3. Gliadin—grains.

2. Extractives.
   a. Amides in plants.
   b. Creatin in meats.

V. NUTRITIVE VALUE OF FOOD.
   A. Caloric value.
   B. Nutritive value.

VI. STANDARD DIETARIES—i. e., things which are generally approved and things to avoid.

VII. DIET IN DISEASE.

Practice.

A course of twenty lessons of two hours each, combining theory and practice. When work on any specific subject is completed, a thorough review is given and an opportunity offered for the class to correct any false impressions or to determine whether they have really grasped the important points. When necessary, a fifteen-minute review is given at the beginning of the lesson.

LESSON I.

Theory.

Including divisions I, II, and III of outline.

LESSON II.

Theory.

Carbohydrates—classification.
Vegetables—composition, classification.
Function in body—place in diet.
General rules for preparation and cooking.

Practice.

Cooking of type vegetables.

LESSON III.

Theory.

Cereals—discussed in same way as vegetables.

Practice.

Making gruels—cooking type cereals, combinations to make desserts.

LESSON IV.

Theory.

Fruits—discussion same as in vegetables.

Practice.

Preparation of fruits served uncooked.
Cooking of fruits.

LESSON V.

Theory.

Fats—source, assimilation, absorption, function.

Practice.

Experience with heating of fats—application to cooking with frying, drawn butter, sauces, salad dressings.
Review of nonnitrogenous foods.

LESSON VI.

Theory.

Protein—classification, source, function, including B, 1, and 2 in outline.

LESSON VII.

Theory.

Milk—nutritive value, care, preservation, adulterants, pasteurization, sterilization, peptonizing, milk products.

Practice.

Making junket, koumiss, peptonizing milk, by various processes.

LESSON VIII.

Theory.

Eggs, poultry—nutritive value, care, preservation, tests for freshness, rules for cooking, place in diet.

Practice.

Cooking eggs in shell and out, omelet, combinations of egg and milk (as in egg-nog), albumin drinks, custards, goldenrod eggs, etc.

LESSON IX.

Theory.

Fish, beef, and veal; mutton and lamb; pork, cuts of meat; nutritive value, affected by age of animal; care; method of killing; method of handling after killing; rules for cooking.

Practice.

Broiling pan (flame)—fish, steaks, bacon; scalloped or creamed fish; oysters, stewed or fried.

LESSON X.

Review, theoretical and practical.

LESSON XI.

Written quiz, and discussion of note books.

LESSON XII.

Theory.

Organic acids—source, value, function.

Practice.

Making beverages.

Refreshing—fruit juices.

Stimulating—tea, coffee, etc.

Nourishing—cocoa, milk drinks.

Making sandwiches.

LESSON XIII.

Theory.

Frozen mixtures—ices, creams.

Combinations—chemistry of freezing.

Value of frozen mixtures in dietary of sick.

Practice.

Frozen mixtures of each type.

LESSON XIV.

Theory.

Calorie defined—value of knowing.

Caloric value of foods.

Practice.

Determining caloric value of some common foods.

LESSON XV.

Theory.

"Balanced" diet—food requirement affected by age, size, environment, etc.

Dietaries for different people and different conditions.

Practice.

Making salads.

LESSON XVI.

Theory.

Leavening agents—egg, air, gas formed by baking powder, soda, and acid medium; yeast, application in cooking.

Practice.

Making bread, muffins, or biscuits; cake. Class divided, as it will not be possible (as a general thing) for all to do both types of baking at one lesson.

LESSON XVII.

Theory.

Diet in disease—"indigestion," constipation, skin diseases, "fevers," "rheumatism," gout, tuberculosis.

Practice.

Same as XVI—alternating.

LESSON XVIII.

Diet in metabolic diseases.

Diabetes, cardiac troubles, nephritis, gastritis.

LESSON XIX.

Infant feeding.

Commercially prepared foods, modified milk, formulas.

LESSON XX.

Examination.

CHAPTER XVII.

SPECIAL DIETS AND PRINCIPAL FOODS.

SPECIAL DIETS DESIGNED FOR USE IN THE HOSPITAL OR THE HOME—SOME OF THE PRINCIPAL ARTICLES OF FOOD FOR THE SICK AND THEIR FOOD VALUES IN CALORIES.[1]

LIQUID DIET.

Milk Lemonade (5 Glasses).

Protein, 6.4 grams; fat, 6.2 grams; carbohydrates, 189.5 grams; calories, 909.2.

Take 6 ounces (or ¾ cup) sugar and dissolve in 1 pint boiling water; add ½ cup lemon juice, 30 c. c. (1 sherry glass) sherry; then add gradually ¾ cup whole milk; stir well; strain through jelly bag until clear.

Albuminized Milk (2 Glasses).

Protein, 12.6 grams; fat, 8.2 grams; carbohydrates, 18.3 grams; calories, 190.2.

Take 1 egg white, 1 cup whole milk, 1 teaspoon sugar; put in a glass jar; shake until thoroughly mixed. This may be flavored with 1 teaspoon fruit juice, or a few drops vanilla or a few drops sherry if the patient may have them.

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[1]All dry materials measured in spoons and cups are made level, and all such dry materials as flour, meal, powdered sugar, etc., are sifted before measuring. Solid materials, such as butter, lard, etc., are packed solidly and smoothly into spoon or cup.

EQUIVALENTS.

3 teaspoons	=	1 tablespoon	=	15 c. c.	=	½ ounce
16 tablespoons	=	1 cup	=	250 c. c.	=	8 ounces
2 cups	=	1 pint	=	500 c. c.		
2 pints	=	1 quart	=	1,000 c. c.		
2 tablespoons butter	=	1 ounce	=	30 grams		
4 tablespoons flour	=	1 ounce				
1 egg	=	45–50 grams				

Eiweissmilch.

Comparison—8 ounces whole milk will yield 169 calories, and 8 ounces eiweissmilch will yield 95 calories. To increase eiweissmilch to calory value of whole milk, add ⅔ dram lactose to each ounce of milk.

Mix the curds of 1 quart whole milk with 1 pint buttermilk made from skimmed milk; add water to make the whole quantity 1 quart. This gives protein-high food, which is poor in salt and sugar, and the fat relatively large.

Difficulties—(a) Buttermilk is not stable; (b) hard to get curd fine enough to stay in suspension.

To make curd—Boil milk 5 minutes; cool; add chymogen in the proportion 1 teaspoon to 1 quart; let stand one hour at 40° C.; strain through sterile cheesecloth; let drip one to one and one-half hours; press through sieve twice, with buttermilk and water added; beat vigorously. Place in warm water long enough to take off chill from milk, but use care not to heat enough to cause curds to become lumpy.

Koumiss.

Protein, 33 grams; fat, 40 grams; carbohydrates, 80 grams; calories, 824.

Take 4 cups lukewarm whole milk (1,000 c. c.), ¼ yeast cake dissolved in ¼ cup tepid water, 2 tablespoons sugar; pour into bottles (two-thirds full); tightly cork; shake well; let stand in warm place (100° F.) not less than two hours and not more than six hours; then place on ice twenty-four hours. Serve ice cold.

Whey (2 Glasses).

Take 1 cup milk, separated by heat or acid; strain through cheesecloth; to this whey add 30 c. c. (1 glass) wine, juice of 2 lemons, 1 tablespoon sugar, 1 junket

tablet; have the liquid lukewarm when the junket tablet is added; when set, put in a cool place. This is a refreshing way of serving a stimulant or laxative; the nutritive value is chiefly in the lactose and cane sugar.

Beef Tea (2 Servings).

Take 1 pound meat (steak); cut into 1-inch cubes; cover with 1 cup cold water; let stand one-half hour in order to dissolve out the proteins soluble in cold water; put in double boiler or in Mason jar set in a water bath, and allow to simmer for one-half hour below boiling point; increase the temperature and cook for one-half hour longer. Pour liquid from the meat, but do not strain, as the flocculent particles contain the nourishing part of the beef tea.

Rice Gruel (2 Servings).

Protein, 10.1 grams; fat, 1.3 grams; carbohydrates, 28.5 grams; calories, 92.

Take 1 tablespoon or ½ ounce rice; cook for one-half hour in 1 cup skimmed milk, using a double boiler or an asbestos mat to prevent boiling of milk; strain through coarse sieve, pressing all rice through.

Rice Caudle (4 Servings).

Protein, 13.8 grams; fat, 1.9 grams; carbohydrates, 43.6 grams; calories, 119.

Cook rice and milk as for gruel, with the addition of the raisins, sugar, and lemon rind or nutmeg; strain all and pour over stiffly beaten egg white. Take 1 tablespoon rice, 1 cup milk, 6 raisins, grated rind of ½ lemon or very little grated nutmeg, 1 tablespoon sugar, 1 egg white.

Calf's-Foot Jelly (15 to 20 Servings).

Wash and divide 4 feet, removing all fat; use 2½ cups water per pound; cook slowly seven hours; strain and let

stand twelve hours; remove fat; to 1 quart of stock add 6 tablespoons sugar, rind and strained juice of 3 lemons, 2 inches cinnamon stick, 3 cloves, 1 bay leaf, 1 blade mace, 2 teaspoons coriander seeds, 3 crushed egg shells, beaten whites of 3 eggs; let boil one minute and stand ten minutes to settle; strain through bag; add 1 cup brandy, ½ cup sherry.

Van Noorden's Gruel (Amount Required for 24 Hours).

Take 250 grams oatmeal; cook in two and one-quarter times as much water as oatmeal for several hours (not less than eight); then add 200 to 300 grams butter, 5 to 8 egg whites or 100 grams vegetable albumin. Beat all together until smooth and the butter is well incorporated. On oatmeal days only coffee (black) or tea, with lemon juice, red wine, cognac, or whisky, should be given. Absolutely forbid all meat. Allow only vegetable protein and cooked egg. Precede an oatmeal day usually by several strict diet days and *always* one or two green vegetable days. (Often longer time is necessary to get sugar free.) After three or four oatmeal days, then one or two green vegetable days again.

DIABETIC DIET.

Tomato Jelly Salad (4 Servings).

Protein, 6.64 grams; fat, .9 gram; carbohydrates, 10.6 grams; calories, 74.1.

Take 1 cup tomatoes; add ½ bay leaf, 1 sprig parsley, 3 whole cloves, 1 small slice onion, ¼ teaspoon salt; simmer about twenty to thirty minutes; strain and add 1 teaspoon gelatin (that has been soaked in 3 tablespoons cold water) to the tomato mixture while still warm; pour into small cups and chill. Serve on lettuce leaves with mayonnaise dressing.

Wine Jelly (5 Servings).

One serving, 100 grams—Protein, 2 grams; fat, .02 grams; carbohydrates, 127 grams; calories, 173.

Take 1½ tablespoons gelatin; soak in 1 cup cold water; dissolve in 1 cup boiling water; cool; add 1½ tablespoons sherry, juice of 1½ lemons; put into molds and chill.

Coffee Charlotte (3 Servings).

Protein, 16.2 grams; fat, 1 gram; carbohydrates, 2.4 grams; calories, 283.9.

Soak 1 teaspoon gelatin in 3 tablespoons cold water; add ⅓ cup boiling water to dissolve the gelatin; to this add 1 teaspoon lemon juice, 2 tablespoons orange juice, 2 tablespoons coffee; chill the mixture to the consistency of syrup; add ¼ cup whipped cream, ½ egg white beaten stiff; fold all together; put into molds and chill.

Coffee Jelly (3 Servings).

Protein, 8.2 grams; carbohydrates, .009 grams; calories, 33.9.

Soak 1 tablespoon gelatin in 1 cup cold water; add 1 cup boiling coffee, ⅛ grain saccharin; 2 or 3 drops vanilla or sherry may be added if desired; put into molds and chill.

Baked Cauliflower (5 Servings).

Weight of mixture, 267 grams—Protein, 21.3 grams; fat, 62.1 grams; carbohydrates, 8.3 grams; calories, 677.8.

Place soft boiled cauliflower in an open baking dish, pour sour cream, melted butter, and Parmesan cheese over it; then bake in the oven.

Cabbage Souffle (6 Servings).

Protein, 53.6 grams; fat, 72.9 grams; carbohydrates, 13.4 grams; calories, 748.

Boil 1 small head of cabbage in salt water with a small

onion and ½ pound minced ham; drain; add 1 egg slightly beaten and mixed with 4 tablespoons sour cream; fold in 1 egg white beaten stiff; put into a baking dish, cover with 2 ounces Parmesan cheese, and bake. May be served with tomato sauce.

Hollandaise Sauce (4 Servings).

Protein, 8 grams; fat, 45.6 grams; carbohydrates, 4.4 grams; calories, 461.

Take 1 egg yolk slightly beaten; add ½ cup cream, ½ tablespoon butter; cook in double boiler, stirring constantly until a soft custard. To be served with vegetables.

Baked Custard (3 Servings).

Protein, 19.3 grams; fat, 73.1 grams; carbohydrates, 8.8 grams; calories, 717.

Take 1½ eggs slightly beaten, 1 cup cream, ⅓ teaspoon either vanilla or sherry; bake in moderate oven fifteen to twenty minutes.

Bran Muffins (12 Muffins).

One muffin—Protein, 2.2 grams; fat, 3.7 grams; carbohydrates, 1.8 grams; calories, 60.

Take 2 cups bran flour, 3 eggs (beaten separately), 2 tablespoons butter or more, ½ teaspoon soda, 1 cup sour milk or buttermilk, 1 pinch salt; add egg yolks and milk in which salt and soda have been dissolved; fold in whites; if wished, add ½ cup nuts; bake in moderate oven twenty minutes; if baked longer, they become too dry.

Snow Pudding (2 Servings).

One serving—Protein, 9.12 grams; fat, .42 grams; carbohydrates, 4.9 grams; calories, 32.7.

Take 1 teaspoon gelatin, 1 tablespoon cold water, 1 egg white, ¼ cup boiling water, 1 tablespoon lemon juice,

saccharin to taste; soak the gelatin in cold water, dissolve in boiling water; strain; add the lemon juice and saccharin; set in ice water to cool; stir occasionally; beat the white of the egg to a stiff froth, and, when the gelatin begins to thicken, add the egg white and beat all together until very light; chill in a wet mold. Serve with boiled custard.

Cheese Souffle (8 Servings).

One serving—Protein, 11.1 grams; fat, 34.7 grams; carbohydrates, 1.4 grams; calories, 264.

Grate 2 ounces Parmesan cheese and 2⅓ tablespoons Swiss cheese; stir well with 4⅔ tablespoons fresh melted butter, yolks of 4 eggs and the whites beaten stiff; season with ground white pepper and salt; fill two small porcelain molds, bake slowly ten to fifteen minutes, serve quickly.

Spinach Pudding (3 Large Servings).

One serving—Protein, 16.6 grams; fat, 29.9 grams; carbohydrates, 5.6 grams; calories, 247.

Mix 1 cup boiled spinach, 1 egg yolk and white whipped stiff, 1 slice onion, 2 tablespoons cream, 2 tablespoons ham cut into cubes; place the mixture in a well-buttered dish and steam in a "bain marie."

Stuffed Eggs (4 Servings).

Protein, 27.6 grams; fat, 42.2 grams; carbohydrates, 4.9 grams; calories, 526.

Mash the yolks of 2 hard-boiled eggs with a lump of butter; thicken with Parmesan cheese, 1 raw egg yolk, 3 tablespoons sour cream; fill the 4 halves of the whites of the eggs with the mixture, place in a buttered dish, sprinkle with cream and cheese, and bake in the oven.

Some of the Principal Articles of Food for the Sick.

With amounts used in each service, their chemical constituents, and food values in calories.

FOOD MATERIALS	Amount grams	Average serving	Proteins, grams	Fat, grams	Carbohydrates, grams	Calories
Almonds	15	10 large	3.15	8.10	2.60	95.80
*Apples, baked	120	1 large	.61	.58	29.3	128.
Apples, fresh	150	average size	.45	.45	16.2	72.
Apricots, canned	50	.....	.45	.....	8.65	36.4
Artichokes	180	.....	3.24	14.5	8.28	48.5
Asparagus, canned	125	.....	1.87	1.25	3.25	22.6
Bacon, medium fat	30	3 slices	4.65	12.78	.....	127.62
Beans, butter	100	4 tablesp.	9.4	.6	29.1	159.6
Beans, kidney	70	4 tablesp.	4.9	.14	12.95	72.66
Beans, lima	80	4 tablesp.	3.2	.24	11.68	61.68
Beans, string, canned	50	2 tablesp.	.55	.05	1.9	10.25
Beans, waxed, canned	60	2 tablesp.	.60	.06	1.86	10.38
Beef, roast, very lean	100	1 large slice	22.3	1.66	.....	111.
Beets, fresh, cooked	70	.....	1.71	.07	5.18	28.19
Biscuit, gluten	7.5	1	4.59	2.29	.....	41.82
Biscuit, shredded wheat	29	1	3.05	.41	22.59	109.
Butter	100	3 tablesp.	1.	85.	.....	769.
Butter, peanut	25	2 teasp.	7.325	11.625	4.275	151.025
Bread	30	2 slices	2.76	.39	15.93	80.
Brussels sprouts, canned	100	3 tablesp.	1.5	.1	3.4	21.
*Cabbage, cooked	100	3 tablesp., hpg.	.6	.1	.4	5.
*Carrots, cooked	100	3 tablesp., hpg.	.53	.17	3.39	18.
*Cauliflower, cooked	120	4 tablesp., hpg.	1.08	.12	.48	8.
*Celery, uncooked	55	3 stalks	.5	.05	1.43	8.

*All food materials marked with a star (*) were computed from Locke's tables of cooked foods. The others were computed from Atwater's tables.

FOOD MATERIALS	Amount grams	Average serving	Proteins, grams	Fat, grams	Carbohydrates, grams	Calories
Cheese, cheddar	20	1 teasp., hpg.	5.54	7.36	.82	95.
Cheese, cottage	100	4 tablesp., hpg.	20.9	1.	4.3	112.
*Cheese, cream	20	1 cubic inch	5.2	6.7	.48	86.08
Cherries, canned	100	2 tablesp., hpg.	1.7	.1	21.1	89.1
*Chicken, roast, light meat	100	2 slices	32.1	2.4	2.1	181.
Corn, canned	100	5 tablesp.	2.8	1.2	19.	98.
Cream	80	4 tablesp.	2.76	20.56	2.84	216.
*Cucumbers	50	8 slices	.40	.1	1.55	8.7
Custard, no sugar	128	3 tablesp.	7.72	29.26	3.98	287.14
Custard, no sugar (half cream, half water)	175	6 tablesp.	9.93	29.13	3.19	326.
*Dates, edible portion	83	10 large.	1.58	2.08	58.6	266.
Eggplant, edible portion	100	4 slices	1.2	.3	5.1	29.
Eggs, cooked	50	1	6.6	6.	.....	83.
*Farina, cooked	100	2 tablesp.	1.65	.21	11.45	56.
Fish, white, edible portion	100	2 tablesp., hpg.	29.9	.36	3.6	108.
Gelatin, wine	100	2 tablesp., hpg.	1.97	.02	1.27	17.3
*Gooseberries	90	4 tablesp., hpg.	.9	.....	11.79	52.
*Grapefruit	300	½ large	2.37	.6	30.27	139.
Ham, boiled	33	1 slice	6.69	7.39	.....	87.15
*Lamb, roast	75	1 slice	14.78	9.53	.....	150.
Lettuce	25	4 medium leaves	.3	.07	.73	4.8
*Milk	†8	1 cup	7.26	8.8	11.	157.
Muffins, bran	30	1 small	2.23	3.71	1.8	59.93
Mushrooms	100	4 tablesp.	3.5	.4	6.6	44.8
Nuts, peanuts, edible portion	30	.....	7.74	11.58	7.32	164.46
Nuts, walnuts, edible portion	42	10 large	7.73	27.05	5.46	296.
*Oatmeal, cooked	200	4 tablesp., hpg.	5.6	1.	23.	126.
*Oil, olive	13	1 tablesp.	.....	13.	.....	121.

†The amount of milk represents 8 ounces.

FOOD MATERIALS	Amount grams	Average serving	Proteins, grams	Fat, grams	Carbohydrates, grams	Calories
Olives	3	.....	.21	5.46	2.31	60.
*Onions, cooked	100	2 tablesp.	1.2	1.8	4.9	42.
*Oranges	.....	1 medium	1.5	.25	21.25	96.
Oysters	100	5 medium	6.	1.3	8.3	49.1
*Peaches, fresh	128	average size	.64	.13	9.86	44.
Peas, canned	100	6 tablesp.	3.6	.20	9.8	55.48
Pineapple, canned	100	1 slice	.4	.7	36.4	153.5
*Potatoes, baked	130	medium	3.77	.2	32.07	149.
Potatoes, sweet	80	1 small	2.4	1.68	33.68	159.
Pudding, snow	.....	1	9.12	.42	4.9	32.7
Pudding, spinach	.....	1	16.6	29.9	5.6	246.
Radish	50	.....	.68	.50	2.9	14.65
*Raisins	25	10 large	.57	.75	17.13	80.
*Rhubarb, cooked	90	2 tablesp., hpg.	.36	.36	1.98	12.7
Rice, boiled	100	3 tablesp.	2.8	.1	24.4	109.7
*Salad dressing, boiled	21	1 tablesp.	.26	19.9	.05	187.
*Salmon, cooked	100	2 tablesp.	19.65	10.21	5.36	198.
*Sardines, canned	100	10 fish	23.	19.7	.....	278.
Souffle, cabbage	100	2 tablesp., hpg.	5.5	7.3	2.5	107.7
Souffle, cheese	.....	1 tablesp.	11.1	34.7	1.4	264.01
Souffle, egg	50	½ souffle	5.22	4.09	38.09	216.
*Spinach, cooked	100	3½ tablesp.	2.1	4.1	2.6	57.
*Squash, cooked	100	4 tablesp.	1.36	.82	13.6	69.
*Squash, canned	100	4 tablesp.	.9	.5	10.5	52.
Tomatoes, cooked	70	4 tablesp.	.84	.14	2.8	16.24
Tomatoes, raw	100	5 slices	1.02	.2	4.	22.8
*Turnips	140	3 tablesp.	4.5	.08	.91	6.
*Veal	75	1 large slice	21.33	1.	.....	94.6

CHAPTER XVIII.

COMPOSITION OF COMMON FOODS.

ATWATER TABLES PREPARED FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE—AVERAGE COMPOSITION OF COMMON AMERICAN FOOD PRODUCTS.

Careful selection of diets for the sick, suffering from some of the so-called diseases of metabolism, must depend on accurate knowledge of the chemical constituents of the food articles. Professor W. O. Atwater, some years ago, prepared a list of the commoner foods used in the United States and Canada, with their average chemical constituents. These tables have not only withstood the tests of time, but have been confirmed by the principal laboratories.

Not everyone has these tables always at hand, and it is believed they may prove of value in connection with this volume.

The Atwater tables give the value of food materials in portions which in the raw state yield 100 calories of energy. In special diet work, which is being done with as much accuracy as possible, it is frequently desirable to know the amount of protein, fat, and carbohydrate in the food as it is eaten. For our own convenience a table was prepared in the diet kitchen of the writer which includes the foods we use most commonly in such amounts as are given in an average serving. As far as possible the value of the cooked food is given.

Food Materials (as purchased).	Refuse, per-cent.	Water, per-cent.	Pro-tein, per-cent.	Fat, per-cent.	Carbo-hy-drates, per-cent.	Ash, per-cent.	Fuel value per pound, calo-ries
ANIMAL FOOD.							
Beef, fresh:							
Chuck ribs	16.3	52.6	15.5	15.0	.....	.8	910
Flank	10.2	54.0	17.0	19.0	.....	.7	1,105
Loin	13.3	52.5	16.1	17.5	.....	.9	1,025
Porterhouse steak	12.7	52.4	19.1	17.9	.....	.8	1,100
Sirloin steak	12.8	54.0	16.5	16.1	.....	.9	975
Neck	27.6	45.9	14.5	11.9	.....	.7	1,165
Ribs	20.8	43.8	13.9	21.2	.....	.7	1,135
Rib roll	.....	63.9	19.3	16.7	.....	.9	1,055
Round	7.2	60.7	19.0	12.8	.....	1.0	890
Rump	20.7	45.0	13.8	20.2	.....	.7	1,090
Shank, fore	36.9	42.9	12.8	7.3	.....	.6	545
Shoulder and clod	16.4	56.8	16.4	9.8	.....	.9	715
Fore quarter	18.7	49.1	14.5	17.5	.....	.7	995
Hind quarter	15.7	50.4	15.4	18.3	.....	.7	1,045
Beef, corned, canned, pickled, and dried:							
Corned beef	8.4	49.2	14.3	23.8	.....	4.6	1,245
Tongue, pickled	6.0	58.9	11.9	19.2	.....	4.3	1,010
Dried, salted, and smoked	4.7	53.7	26.4	6.9	.....	8.9	790
Canned boiled beef	.....	51.8	25.5	22.5	.....	1.3	1,410
Canned corned beef	.....	51.8	26.3	18.7	.....	4.0	1,270
Veal:							
Breast	21.3	52.0	15.4	11.0	.....	.8	745
Leg	14.2	60.1	15.5	7.9	.....	.9	625
Leg cutlets	3.4	68.3	20.1	7.5	.....	1.0	695
Fore quarter	24.5	54.2	15.1	6.0	.....	.7	535
Hind quarter	20.7	56.2	16.2	6.6	.....	.8	580
Mutton:							
Flank	9.9	39.0	13.8	36.9	.....	.6	1,770
Leg, hind	18.4	51.2	15.1	14.7	.....	.8	890
Loin chops	16.0	42.0	13.5	28.3	.....	.7	1,415
Fore quarter	21.2	41.6	12.3	24.5	.....	.7	1,235
Hind quarter, without tallow	17.2	45.4	13.8	23.2	.....	.7	1,210
Lamb:							
Breast	19.1	45.5	15.4	19.1	.....	.8	1,075
Leg, hind	17.4	52.9	15.9	13.6	.....	.9	860
Pork, fresh:							
Ham	10.7	48.0	13.5	25.9	.....	.8	1,320
Loin chops	19.7	41.8	13.4	24.2	.....	.8	1,245
Shoulder	12.4	44.9	12.0	29.8	.....	.7	1,450
Tenderloin	.....	66.5	18.9	13.0	.....	1.0	895
Pork, salted, cured, and pickled:							
Ham, smoked	13.6	34.8	14.2	33.4	.....	4.2	1,635
Shoulder, smoked	18.2	36.8	13.0	26.6	.....	5.5	1,335
Salt pork	.....	7.9	1.9	86.2	.....	3.9	3,555
Bacon, smoked	7.7	17.4	9.1	62.2	.....	4.1	2,715
Sausage:							
Bologna	3.3	55.2	18.2	19.7	.....	3.8	1,155
Pork	.....	39.8	13.0	44.2	1.1	2.2	2,075
Frankfort	.....	57.2	19.6	18.6	1.1	3.4	1,155
Soups:							
Celery, cream of	.....	88.6	2.1	2.8	5.0	1.5	235
Beef	.....	92.9	4.4	.4	1.1	1.2	120
Meat Stew	.....	84.5	4.6	4.3	5.5	1.1	365
Tomato	.....	90.0	1.8	1.1	5.6	1.5	185
Poultry:							
Chicken, broilers	41.6	43.7	12.8	1.4	.....	.7	305
Fowls	25.9	47.1	13.7	12.3	.....	.7	765
Goose	17.6	38.5	13.4	29.8	.....	.7	1,475
Turkey	22.7	42.4	16.1	18.4	.....	.8	1,060

Food Materials (as purchased).	Refuse, per-cent.	Water, per-cent.	Pro-tein, per-cent.	Fat, per-cent.	Carbo-hy-drates, per-cent.	Ash, per-cent.	Fuel value per pound, calo-ries
ANIMAL FOOD—Cont'd.							
Fish:							
Cod, dressed	29.9	58.5	11.1	.2	.....	.8	220
Halibut, steaks or sections	17.7	61.9	15.3	4.4	.....	.9	475
Mackerel, whole	44.7	40.4	10.2	4.2	.....	.7	370
Perch, yellow, dressed	35.1	50.7	12.8	.7	.....	.9	275
Shad, whole	50.1	35.2	9.4	4.8	.....	.7	380
Shad, roe	.....	71.2	20.9	3.8	2.6	1.5	600
Fish, preserved:							
Cod, salt	24.9	40.2	16.0	.4	.....	18.5	325
Herring, smoked	44.4	19.2	20.5	8.8	.....	7.4	755
Fish, canned:							
Salmon	.....	63.5	21.8	12.1	.....	2.6	915
Sardines	*5.0	53.6	23.7	12.1	.....	5.3	950
Shellfish:							
Oysters, "solids"	.....	88.3	6.0	1.3	3.3	1.1	225
Clams	.....	80.8	10.6	1.1	5.2	2.3	340
Crabs	52.4	36.7	7.9	.9	.6	1.5	200
Lobsters	61.7	30.7	5.9	.7	.2	.8	145
Eggs: Hens' eggs	†11.2	65.5	13.1	9.3	.....	.9	635
Dairy products, etc.:							
Butter	.....	11.0	1.0	85.0	.....	3.0	3,410
Whole milk	.....	87.0	3.3	4.0	5.0	.7	310
Skim milk	.....	90.5	3.4	.3	5.1	.7	165
Buttermilk	.....	91.0	3.0	.5	4.8	.7	160
Condensed milk	.....	26.9	8.8	8.3	54.1	1.9	1,430
Cream	.....	74.0	2.5	18.5	4.5	.5	865
Cheese, cheddar	.....	27.4	27.7	36.8	4.1	4.0	2,075
Cheese, full cream	.....	34.2	25.9	33.7	2.4	3.8	1,885
VEGETABLE FOOD.							
Flour, meal, etc.:							
Entire-wheat flour	.....	11.4	13.8	1.9	71.9	1.0	1,650
Graham flour	.....	11.3	13.3	2.2	71.4	1.8	1,645
Wheat flour, patent roller process—							
High-grade and medium	.....	12.0	11.4	1.0	75.1	.5	1,635
Low grade	.....	12.0	14.0	1.9	71.2	.9	1,640
Macaroni, vermicelli, etc.	.....	10.3	13.4	.9	74.1	1.3	1,645
Wheat breakfast food	.....	9.6	12.1	1.8	75.2	1.3	1,680
Buckwheat flour	.....	13.6	6.4	1.2	77.9	.9	1,605
Rye flour	.....	12.9	6.8	.9	78.7	.7	1,620
Corn meal	.....	12.5	9.2	1.9	75.4	1.0	1,635
Oat breakfast food	.....	7.7	16.7	7.3	66.2	2.1	1,800
Rice	.....	12.3	8.0	.3	79.0	.4	1,620
Tapioca	.....	11.4	.4	.1	88.0	.1	1,650
Starch	.....	.....	.....	.....	90.0	.....	1,675
Bread, pastry, etc.:							
White bread	.....	35.3	9.2	1.3	53.1	1.1	1,200
Brown bread	.....	43.6	5.4	1.8	47.1	2.1	1,040
Graham bread	.....	35.7	8.9	1.8	52.1	1.5	1,195
Whole-wheat bread	.....	38.4	9.7	.9	49.7	1.3	1,130
Rye bread	.....	35.7	9.0	.6	53.2	1.5	1,170
Cake	.....	19.9	6.3	9.0	63.3	1.5	1,630
Cream crackers	.....	6.8	9.7	12.1	69.7	1.7	1,925
Oyster crackers	.....	4.8	11.3	10.5	70.5	2.9	1,910
Soda crackers	.....	5.9	9.8	9.1	73.1	2.1	1,875

*Refuse, oil.
†Refuse, shell.

Food Materials (as purchased).	Refuse, per-cent.	Water, per-cent.	Pro-tein, per-cent.	Fat, per-cent.	Carbo-hy-drates, per-cent.	Ash, per-cent.	Fuel value per pound, calo-ries
VEGETABLE FOOD—Cont'd.							
Sugars, etc.:							
Molasses	.....	.....	.....	.....	70.0	.....	1,225
Candy *	.....	.....	.....	.....	96.0	.....	1,680
Honey	.....	.....	.....	.....	81.0	.....	1,420
Sugar, granulated	.....	.....	.....	.....	100.0	.....	1,750
Maple syrup	.....	.....	.....	.....	71.4	.....	1,250
Vegetables: †							
Beans, dried	.....	12.6	22.5	1.8	59.6	3.5	1,520
Beans, lima, shelled	.....	68.5	7.1	.7	22.0	1.7	540
Beans, string	7.0	83.0	2.1	.3	6.9	.7	170
Beets	20.0	70.0	1.3	.1	7.7	.9	160
Cabbage	15.0	77.7	1.4	.2	4.8	.9	115
Celery	20.0	75.6	.9	.1	2.6	.8	65
Corn, green (sweet), edible portion	.....	75.4	3.1	1.1	19.7	.7	440
Cucumbers	15.0	81.1	.7	.2	2.6	.4	65
Lettuce	15.0	80.5	1.0	.2	2.5	.8	65
Mushrooms	.....	88.1	3.5	.4	6.8	1.2	185
Onions	10.0	78.9	1.4	.3	8.9	.5	190
Parsnips	20.0	66.4	1.3	.4	10.8	1.1	230
Peas (*Pisum sativum*), dried	.....	9.5	24.6	1.0	62.0	2.9	1,565
Peas (*Pisum sativum*), shelled	.....	74.6	7.0	.5	16.9	1.0	440
Cowpeas, dried	.....	13.0	21.4	1.4	60.8	3.4	1,505
Potatoes	20.0	62.6	1.8	.1	14.7	.8	295
Rhubarb	40.0	56.6	.4	.4	2.2	.4	60
Sweet potatoes	20.0	55.2	1.4	.6	21.9	.9	440
Spinach	.....	92.3	2.1	.3	3.2	2.1	95
Squash	50.0	44.2	.7	.2	4.5	.4	100
Tomatoes	.....	94.3	.9	.4	3.9	.5	100
Turnips	30.0	62.7	.9	.1	5.7	.6	120
Vegetables, canned:							
Baked beans	.....	68.9	6.9	2.5	19.6	2.1	555
Peas (*Pisum sativum*), green	.....	85.3	3.6	.2	9.8	1.1	235
Corn, green	.....	76.1	2.8	1.2	19.0	.9	430
Succotash	.....	75.9	3.6	1.0	18.6	.9	425
Tomatoes	.....	94.0	1.2	.2	4.0	.6	95
Fruits, dried:							
Apples	.....	28.1	1.6	2.2	66.1	2.0	1,185
Apricots	.....	29.4	4.7	1.0	62.5	2.4	1,125
Dates	10.0	13.8	1.9	2.5	70.6	1.2	1,275
Figs	.....	18.8	4.3	.3	74.2	2.4	1,280
Raisins	10.0	13.1	2.3	3.0	68.5	3.1	1,265
Fruits, berries, etc., fresh: ‡							
Apples	25.0	63.3	.3	.3	10.8	.3	190
Bananas	35.0	48.9	.8	.4	14.3	.6	260
Grapes	25.0	58.0	1.0	1.2	14.4	.4	295
Lemons	30.0	62.5	.7	.5	5.9	.4	125

*Plain confectionery not containing nuts, fruit, or chocolate.

†Such vegetables as potatoes, squash, beets, etc., have a certain amount of inedible material, skin, seeds, etc. The amount varies with the method of preparing the vegetables, and cannot be accurately estimated. The figures given for refuse of vegetables, fruits, etc., are assumed to represent approximately the amount of refuse in these foods as ordinarily prepared.

‡Fruits contain a certain proportion of inedible materials, as skin, seeds, etc., which are properly classed as refuse. In some fruits, as oranges and prunes, the amount rejected in eating is practically the same as refuse. In others, as apples and pears, more or less of the edible material is ordinarily rejected with the skin and seeds and other inedible portions. The edible material which is thus thrown away, and should properly be classed with the waste, is here classed with the refuse. The figures for refuse here given represent, as nearly as can be ascertained, the quantities ordinarily rejected.

Food Materials (as purchased).	Refuse, per-cent.	Water, per-cent.	Pro-tein, per-cent.	Fat, per-cent.	Carbo-hy-drates, per-cent.	Ash, per-cent.	Fuel value per pound, calo-ries
VEGETABLE FOOD—Cont'd.							
Fruits, berries, etc., fresh—Cont'd.							
Muskmelons	50.0	44.8	.3	.....	4.6	.3	80
Oranges	27.0	63.4	.6	.1	8.5	.4	150
Pears	10.0	76.0	.5	.4	12.7	.4	230
Persimmons, edible portion	.....	66.1	.8	.7	31.5	.9	550
Raspberries	.....	85.8	1.0	.....	12.6	.6	220
Strawberries	5.0	85.9	.9	.6	7.0	.6	150
Watermelons	59.4	37.5	.2	.1	2.7	.1	50
Nuts:							
Almonds	45.0	2.7	11.5	30.2	9.5	1.1	1,515
Brazil nuts	49.6	2.6	8.6	33.7	3.5	2.0	1,485
Butternuts	86.4	.6	3.8	8.3	.5	.4	385
Chestnuts, fresh	16.0	37.8	5.2	4.5	35.4	1.1	915
Chestnuts, dried	24.0	4.5	8.1	5.3	56.4	1.7	1,385
Cocoanuts	*48.8	7.2	2.9	25.9	14.3	.9	1,295
Cocoanut, prepared	.....	3.5	6.3	57.4	31.5	1.3	2,865
Filberts	52.1	1.8	7.5	31.3	6.2	1.1	1,430
Hickory nuts	62.2	1.4	5.8	25.5	4.3	.8	1,145
Pecans, polished	53.2	1.4	5.2	33.3	6.2	.7	1,465
Peanuts	24.5	6.9	19.5	29.1	18.5	1.5	1,775
Piñon (*Pinus edulis*)	40.6	2.0	8.7	36.8	10.2	1.7	1,730
Walnuts, black	74.1	.6	7.2	14.6	3.0	.5	730
Walnuts, English	58.1	1.0	6.9	26.6	6.8	.6	1,250
Miscellaneous:							
Chocolate	.....	5.9	12.9	48.7	30.3	2.2	2,625
Cocoa, powdered	.....	4.6	21.6	28.9	37.7	7.2	2,160
Cereal coffee, infusion (1 part boiled in 20 parts water)†	.....	98.2	.2	.....	1.4	.2	30

*Milk and shell.

†The average of five analyses of cereal coffee grain is: Water 6.2, protein 13.3, fat 3.4, carbohydrates 72.6 and ash 4.5 percent. Only a portion of the nutrients, however, enter into the infusion. The average in the table represents the available nutrients in the beverage. Infusions of genuine coffee and of tea like the above contain practically no nutrients.

CHAPTER XIX.

SOME SELECTED RECIPES FOR THE HOSPITAL.

SOUPS—FISH AND POULTRY—MEATS—VEGETABLES—EGGS—SALADS—SALAD DRESSINGS—SAUCES—DESSERTS—BREADS—CAKES—BEVERAGES.

There are cook books without end and special and general recipes in various forms, published to meet the exigencies of many demands, and there are hospital diets and recipes available to dietitians in modern institutions. No special merit, therefore, attaches to the recipes given below; they are merely somewhat detailed accounts of the preparation and service of some of the dishes and dainties that the author has conceived and used with satisfaction in her own work. It is hoped they may be a source of inspiration to other dietitians, and perhaps an occasional refuge when time urges and when the exactions of disturbing digestions and nervous doctors almost set one's wits on end.

In the following recipes no pretense is made of covering a wide range or of giving a large number of recipes in any particular classification of foods. Some of these were devised for special diets, some for serving specific groups of people, and some just for the purpose of lending variety. This explains why some of them are given in quantities sufficient for large numbers of people and some for small numbers of people.

SOUPS.

Cream Soups.

All cream soups have a white sauce for their foundation, the proportion of butter and flour varying according

to the consistency of the material used and according to the thickness of soup desired.

The white sauce is made by blending the flour and butter until a smooth paste is made, then pouring the hot milk over the paste, stirring constantly to prevent the starch cooking too quickly and forming lumps.

Cream of Almond Soup (150 Servings).

Protein, 951.56 grams; fat, 2,018.9 grams; carbohydrates, 1,205.1 grams; calories, 26,703.7.

Take 5 cups almonds, 3 cups water, 2 quarts chicken broth, 2 quarts beef broth, 2 small onions and 2 bunches celery cut fine; white sauce made of 5 cups flour, 5 cups butter, 12 quarts milk; blanch the almonds; pound in a mortar until well broken; add water slowly; add stock, onion, celery, ½ cup salt; simmer two hours; add white sauce.

Cream of Celery Soup (100 Servings).

Protein, 460.6 grams; fat, 1,487.4 grams; carbohydrates, 1,021.6 grams; calories, 19,242.

Take 3 quarts strong celery broth made by cooking yellow leaves and outer stalks of celery; add white sauce made of 5 cups flour, 5 cups butter, 12 quarts milk, ½ ounce celery salt.

Cream of Corn Soup (100 Servings).

Protein, 632.8 grams; fat, 1,213.8 grams; carbohydrates, 1,898.8 grams; calories, 21,002.

Take 7 No. 1½ cans corn, 1 quart water, and cook until soft; strain through a sieve; add white sauce made of 3 cups flour, 3 cups butter, 14 quarts milk, ⅓ cup salt.

Duchess Soup (125 Servings).

Protein, 900.6 grams; fat, 1,067.8 grams; carbohydrates, 749.3 grams; calories, 14,950.

Take 4 quarts broth (beef, chicken, or both); add white sauce made of 3 cups flour, 3 cups butter, 10 quarts milk, ⅓ cup salt; just before serving add 10 eggs that are well beaten.

Cream of Pea Soup (100 Servings).

Protein, 695 grams; fat, 1,165 grams; carbohydrates, 1,494 grams; calories, 19,187.

Take 7 No. 1½ cans common peas heated and strained; add white sauce made of 3 cups flour, 3 cups butter, 14 quarts milk, ⅓ cup salt.

Cream of Potato Soup (100 Servings).

Protein, 555 grams; fat, 1,156 grams; carbohydrates, 1,472 grams; calories, 18,463.

Take 3 quarts mashed potato; add white sauce made of 3 cups flour, 3 cups butter, 14 quarts milk, ⅓ cup salt. If desired, a small amount of onion may be sliced and put into the milk, or a few bay leaves may be added to the milk and strained out before the sauce is added to the potato.

Cream of Spinach Soup (125 Servings).

Protein, 749 grams; fat, 1,660 grams; carbohydrates, 1,126 grams; calories, 22,350.

Take 4 quarts strained spinach, thinned with 2 quarts broth; add white sauce made of 5 cups flour, 5 cups butter, 12 quarts milk, ¼ cup salt.

Cream of Tomato Soup (100 Servings).

Protein, 426 grams; fat, 1,218 grams; carbohydrates, 1,061 grams; calories, 16,837.

Take 2 No. 10 cans tomato, cooked with ½ dozen bay leaves, 1 dozen cloves, 2 medium-sized onions chopped fine; cook until the onions are soft; strain, and, before adding to the cream sauce, stir into the tomato 1 teaspoon soda; add white sauce made of 3½ cups flour, 3½ cups butter, 8 quarts milk, ¼ cup salt.

Clam Chowder (100 Servings).

Protein, 268 grams; fat, 247 grams; carbohydrates, 785 grams; calories, 6,344.

Take 7 No. 2½ cans clam chowder, 4 quarts tomato in which are cooked 4 medium-sized onions (cut small) until onions are soft; mix chowder and tomato and add 3 quarts milk. This may be made from fresh clams and any desired vegetables added.

Mulligatawny Soup (125 Servings).

Protein, 664 grams; fat, 933 grams; carbohydrates, 464 grams; calories, 11,068.

Simmer for three hours 7 quarts soup stock, 3 quarts tomato, 4 cups onion, 4 cups carrot, 2 cups celery (onions, carrots, and celery cut fine), 2 peppers, 1 tablespoon cloves, 2 tablespoons parsley, ⅓ cup salt, 3 cups flour made into a smooth paste with cold water; add 6 cups chicken cut into small pieces, 2 cups butter which has been browned; strain, rubbing the vegetables through a sieve.

Tomato Bouillon (120 Servings).

Protein, 343 grams; fat, 304 grams; carbohydrates, 585 grams; calories, 6,445.

Take 3 No. 10 cans tomato, cooked with 2 medium-sized onions cut fine, 3 tablespoons whole cloves, 3 bay leaves;

simmer until well flavored and onions are soft; strain and add 4 quarts broth, and, if too strong, 1 to 2 quarts water.

FISH AND POULTRY.

Boudins (100 Servings).

Protein, 1,322 grams; fat, 1,416 grams; carbohydrates, 325 grams; calories, 19,305.

Take 6 quarts chicken cut into small pieces, 3 tablespoons salt, ¾ cup chopped parsley or 1 cup chopped celery, cayenne; mix well; then mix and add ¾ cup butter, 1 quart stock, 2 cups bread crumbs; add white sauce made of 1 cup flour, 1 cup butter, 5 cups milk; 12 egg yolks, well beaten, added last; put into molds and bake in slow oven fifteen minutes.

Jambolaya.

Cover the bottom of a pan with slices of breakfast bacon; cut up a chicken as for frying; salt and pepper; dip in flour and lay on top of bacon; over this pour 1 pint uncooked rice, 2 large onions chopped fine, 1 quart tomato, 2 pods red pepper chopped very fine; fill the pan with water and cook slowly two or three hours; put in more water if it begins to dry; when ready to serve, stir in 3 or 4 tablespoons butter; a can of mushrooms may be added to this for those who so desire, and, if used, should be put in at the first on top of the chicken.

Roasted Quail.

Take 6 quail, fat, fresh, and tender; pick, draw, singe, and wipe with a damp cloth inside and out; butter inside, and sprinkle with salt and pepper lightly; butter all over the outside, truss, and bind around with a thin slice of bacon; put 1 tablespoon butter in the roasting pan, fit in the quail, and roast in a hot oven twenty to thirty minutes, according to size; put 6 slices hot buttered toast in a hot

dish and lay a quail on each; add ½ tablespoon butter, a little boiling water, and juice of 1 lemon to the gravy in the pan; cook three to four minutes, stirring well; strain, set back on stove to cook two minutes longer; then pour evenly upon the breasts of the birds, so it will soak into the toast; garnish with sliced lemon and watercress; if grape leaves are to be had, wrap the birds in them instead of bacon; after preparing as directed, roast, take up on toast, garnish with fresh young grape leaves, and serve with either spiced grapes or grape jelly.

Codfish Souffle (25 Servings).

Protein, 118 grams; fat, 61 grams; carbohydrates, 238 grams; calories, 1,959.

Take 1 cup rice, 1 quart milk, 1 cup codfish which has been soaked and broken into flakes, 4 egg yolks well beaten, salt; mix carefully, fold in the whites of eggs beaten until stiff and dry; put into casseroles and bake in a moderate oven. Serve with tartar sauce.

Baked Macaroni and Oysters.

Boil macaroni until tender; butter the bottom of baking dish; put in layer of macaroni, then layer of oysters, small bits of butter, sprinkle with salt; then add another layer of macaroni, then more oysters, and continue alternating until dish is nearly full; cover the top layer with cracker crumbs, dotted with bits of butter; pour over enough milk or thin cream to come to top; bake from one-half to three-quarters of an hour.

Mock Terrapin (6 Servings).

Take ½ pound calf's liver cut into cubes and fried to a light brown, 1 salt spoon dry mustard, 3 hard-cooked eggs cut into small pieces, 1 tablespoon butter, salt; melt but-

ter; add liver, dredged in flour; stir all together; add 1 cup hot water. Serve on buttered toast.

Salmon Croquettes, Spiced Jelly Cubes (50 Croquettes).

Cook for five minutes 2 tablespoons finely chopped onion and ⅓ cup finely chopped green pepper with ¾ cup butter and 1 cup flour; stir until well blended; then pour on gradually, while stirring constantly, 4 cups rich milk; bring to the boiling point and add 3 teaspoons salt and 1 teaspoon paprika; then add 7 cups flaked salmon; spread on plates to cool; shape in the form of croquettes, dip in egg and crumbs, fry in deep fat and drain; arrange around mounds of spiced jelly cubes.

Spiced Jelly Cubes.

Put 3 cups cold water, 2 cups sugar, 8 cloves, a 1-inch piece stick cinnamon into a saucepan, place on range, stir until sugar has dissolved and bring to the boiling point; add 2 tablespoons granulated gelatin which has been soaked in 4 tablespoons cold water five minutes; remove from range and stir until gelatin has dissolved; then add ½ cup lemon juice and few grains salt; strain into two oblong shallow pans first dipped into cold water and chill thoroughly; cut into cubes.

Salmon Loaf (125 Servings).

Protein, 7,523 grams; fat, 1,730 grams; carbohydrates, 1,402 grams; calories, 31,168.

Drain the liquor from 20 No. 1 cans salmon and save it; mince the salmon and add 2 cups melted butter, 4 quarts fine bread crumbs, 2 dozen eggs well beaten, ¼ cup salt; mix, mold into loaf, and bake in slow oven forty-five minutes to one hour. Serve with white sauce to which the liquor from salmon has been added, or serve with lemon.

Tuna Fish.

Tuna fish, mixed with a thick white sauce and well flavored with salt, celery salt, and chopped pimento, makes a very pleasing variety if one serves fish often.

Tuna fish salad made from 2 parts fish, 1 part peas, 1 part celery cut fine, and served with a boiled dressing, is also very good.

Fish Chowder (125 Servings).

Protein, 627 grams; fat, 1,142 grams; carbohydrates, 1,088 grams; calories, 17,096.

Take 3 quarts fish cut into small pieces (the heads and trimmings of the fish may be boiled also and add much to the flavor), 3 pounds salt pork cooked thoroughly in 4 quarts water; strain; press through strainer; add 3 quarts potato, 1 cup onion, 2 quarts carrot (potatoes, onions, and carrots diced), few bay leaves if desired, 3 quarts tomato, 4 quarts milk; cook vegetables and bay leaves in tomato until vegetables are soft, then add fish broth and hot milk.

Baked Shad.

Remove intestinal organs and eyes; wash thoroughly and wipe out with a cheese cloth; stuff, not to full, and sew up opening; place fish on rack, laying on 2 strips cheese cloth; dredge with flour, salt and pepper, and lay strips of salt pork on the top; roast, allowing fifteen minutes to a pound.

Stuffing.

Take ¼ loaf bread, 1 tablespoon chopped parsley, 2 tablespoons chopped onion, ½ teaspoon sage, 2 egg yolks, salt and pepper, ¼ cup melted butter; mix thoroughly in order given.

MEATS.

Bacon and Chicken Liver.

Cut bacon into strips, having it sliced very thin; roll chicken livers in flour, wrap bacon around pieces of chicken liver, and skewer with small toothpicks or small skewers; cook in deep fat or in a hot oven until the bacon is well done; remove the skewers and serve hot. Oysters may be wrapped in bacon and served in the same way.

Liver and Bacon.

Flour the liver and sear; cut bacon into squares; alternate layers of liver and bacon, seasoning each; fill about half full of gravy made in pan in which liver was cooked, or with weak stock; cover and bake about one hour. Gouged potatoes may be added after being parboiled.

Boiled Heart, Raisin Sauce.

Clean, wash, and skewer a heart; put into a stew pan, cover with cold water, bring quickly to the boiling point, and let simmer until tender, by which time the liquor should be reduced to 2 cups; remove to a hot serving dish, pour around raisin sauce, and garnish with parsley.

Raisin Sauce.

Protein, 200 grams; fat, 96 grams; carbohydrates, 169 grams; calories, 1,615.

Melt 4 tablespoons butter, add 5 tablespoons flour, and stir until well blended; then pour on gradually, while stirring constantly, the 2 cups liquor in which the heart was cooked; bring to the boiling point, season with salt and pepper, and let boil two minutes; add 1 cup seeded raisins, ½ cup English walnut meats broken into pieces, 2½ tablespoons lemon juice; again bring to the boiling point and pour around boiled heart.

Calves' Tongues, Sauce Piquante.

Wipe 4 calves' tongues with cheese cloth wrung out of cold water, and cook in boiling water to which has been added 6 slices carrot, 2 stalks celery broken into pieces, 1 onion, 8 cloves, 1 teaspoon peppercorns, ½ tablespoon salt; take the tongues from the water, remove the skin and roots, and cut into halves lengthwise; then reheat in sauce piquante.

Sauce Piquante.

Cook ¼ cup butter until brown, stirring constantly; add 6 tablespoons flour and stir until well browned; then pour on gradually, while stirring constantly, 2 cups brown stock; bring to the boiling point and let boil three minutes; add ⅔ teaspoon salt, ½ teaspoon paprika, few grains cayenne, 1 tablespoon vinegar, ½ tablespoon capers, and 1 cucumber pickle thinly sliced.

Stuffed Steak.

Protein, 273 grams; fat, 400 grams; carbohydrates, 88 grams; calories, 504.

Take 2 slices rump steak, 1 cup stale bread crumbs, 2 tablespoons butter, 1 tablespoon finely chopped onion, 1 teaspoon chopped parsley, ⅛ teaspoon sage, 1 teaspoon salt, 1 egg; the meat should be about 1 inch thick; moisten bread crumbs with hot water; then add beaten egg, salt, sage, onion, parsley, and butter, which should be melted; stir well together, spread between the slices of steak, and tie together with a stout cord; put into the baking pan and bake in hot oven until tender; baste often with hot water to which a little strained tomato has been added.

Veal Birds.

Wipe slices of veal from the leg, cut as thinly as possible; then remove bone, skin, and fat; pound until ¼ inch

thick and cut into pieces about 2½ inches long by 1¼ inches wide, each piece making a bird; chop trimmings of meat, adding for every 3 birds a piece of fat salt pork 1 inch square and ¼ inch thick (also chopped); add to the trimmings and pork half their measure of fine cracker crumbs and season highly with salt, cayenne, poultry dressing, lemon juice, and onion juice; moisten with beaten egg and hot water or stock; spread each piece with a thin layer of mixture and avoid having mixture come close to the edge; roll and fasten with skewers; sprinkle with salt and flour, and sauter in hot butter until a golden brown; put in stew pan, add cream to half cover meat, cook slowly twenty to thirty-five minutes or until tender. Serve on small pieces of toast, straining cream remaining in pan over birds and toast, and garnish with parsley. A thin white sauce in place of cream may be served around birds.

Veal Chops en Casserole.

Wipe 6 veal chops very carefully, to remove bits of bone if present; roll in flour and sauter in hot fat until nicely browned on both sides; remove to a casserole; heat 1 cup broth or water, ½ cup each tomato puree and strained corn to the boiling point and pour over the chops; add also ½ teaspoon each salt and pepper; have ready ½ dozen onions cooked half an hour and rinsed in cold water; dry these on a cloth and let brown in a little butter melted in the frying pan; add these to the casserole, cover, and let cook very gently about one hour.

Broiled Chicken.

2-lb. bird—Protein, 123 grams; fat, 13 grams; calories, 612.

A chicken for broiling should be young and tender. Remove the head and feet, split the fowl down the back

and draw; cut through the breast, dividing the fowl into halves; baste with melted butter and broil fifteen to twenty minutes, broiling the bony side first in order to have the fleshy side browned and attractive for serving.

Broiled Squab.

Prepare as broiled chicken, except the squab is not cut into halves.

Baked Squab.

Clean and draw the squab; stuff with any good dressing; lay a few small pieces of bacon across the breast and bake forty-five to sixty minutes, according to size, in a medium hot oven.

VEGETABLES.

Apples, Fried.

Protein, 3 grams; fat, 71 grams; carbohydrates, 177 grams; calories, 1,359.

Take ⅓ cup butter, ⅓ cup sugar, ⅓ cup water, 6 apples (medium size); make syrup of sugar, water, and butter; core apples; cut into slices ½ inch thick; fry in syrup until clear. It may be necessary to add more water while cooking.

Baked Bananas.

No. 1.

Cut the ends from bananas and bake until the skins are black, which will take fifteen to twenty minutes in a hot oven; split the skins and serve with sugar sprinkled over them or with the banana sauce. (See recipes for sauces.)

No. 2.

Protein, 2 grams; fat, 5 grams; carbohydrates, 33 grams; calories, 181.

Slice bananas in halves; for each banana mix 1 teaspoon sugar, 1 teaspoon butter, few drops lemon juice;

spread on the banana and bake in a moderate oven twenty minutes.

Baked bananas are much more easily digested than raw ones, because of the large amount of starch which they contain, and cooked starch is more readily digested than raw.

Cabbage (8 Servings).

Take cabbage which has been cooked; mix with medium white sauce; put in baking dish; add cheese (grated) and buttered bread crumbs; bake until golden brown; or the cheese may be dissolved in the white sauce before pouring on the cabbage.

Eggplant Straws.

Cut an unpeeled eggplant into ¼-inch slices, salt each, put them together again and press them under a heavy weight one hour or more; cut them into equal lengths ¼ inch wide, rejecting the skin; dry and roll them in flour mixed with an equal amount of fine cornmeal and seasoned with salt and a dash of nutmeg; drop a few at a time into hot oil and fry them until they are a delicate brown; dry on soft paper and serve at once. They should be crisp and tender.

Stuffed Eggplant (6 Servings).

Cook fifteen to thirty minutes, according to size, in boiling salted water; cut slice from top; remove pulp, being careful not to scrape too close to skin; chop pulp, and for medium size add 1 cup bread crumbs, 2 tablespoons butter, ½ cup finely chopped onion, seasoning, 1 egg well beaten; refill and cover with crumbs; bake thirty to forty-five minutes.

Peas.

Lay outside leaves of lettuce in bottom of kettle, put peas on top, gradually bring to a boil; water from leaves is sufficient to cook peas, and gives a delicious flavor; cook slowly, season, putting in butter just before serving.

Mashed Potato, Marquise Style.

Cook tomato puree until reduced to thick consistency; beat in well-mashed potato; shape on buttered baking dish, brush with beaten egg diluted with milk; set in oven to brown slightly.

Baked Squash.

For each piece of squash use ½ tablespoon molasses, ½ teaspoon butter, melted together and poured upon squash; bake in hot oven forty-five minutes.

Tomatoes Stuffed With Ripe Olives.

Scoup out 2 tomatoes from the stem end; chop 1 small onion, fry in butter; add the pulp removed from the tomatoes, 1 cup ripe pitted olives, 2 tablespoons bread crumbs; salt and pepper; put the mixture into tomatoes and bake.

Jellied Vegetable (100 Servings).

Take 6 envelopes or 12 tablespoons gelatin soaked in 3 cups cold water; pour 3 quarts hot water over gelatin to dissolve it; add to gelatin 1 cup vinegar, 1 cup lemon juice, 2 tablespoons salt, 3 cups sugar; add vegetables; cut into dice.

Sweet Potatoes, Glazed.

Protein, 18 grams; fat, 17 grams; carbohydrates, 373 grams; calories, 1,742.

Wash and pare 6 medium-sized potatoes; cook ten minutes in boiling salted water; drain, cut into halves lengthwise, and place in a buttered pan; make a syrup

by boiling ½ cup sugar and 4 tablespoons water three minutes; add 1 teaspoon butter; brush potatoes with the syrup and bake fifteen minutes or until soft, brushing twice with the remaining syrup.

MEATS AND VEGETABLES COMBINED.

Stuffed Apples.

Fill with sausage or any chopped meat, using 2 parts meat to 1 part crumbs; pour water over to prevent burning; cover; bake until apples are done.

Asparagus and Eggs (6 Servings).

Protein, 48 grams; fat, 240 grams; carbohydrates, 11 grams; calories, 2,396.

Take 2 dozen stalks asparagus; cut, boil, and drain; 1 cup butter, browned; pour over asparagus; stir well; drop 6 eggs on top; season; cook in oven until eggs are firm.

Baked Corn and Minced Ham (8 to 10 Servings).

Protein, 65 grams; fat, 99 grams; carbohydrates, 143 grams; calories, 1,720.

Take 1 No. 1½ can corn, juice drained off; 1 cup minced ham, ½ cup milk, 1 egg well beaten; salt and pepper; cover with layer of buttered crumbs; bake until custard is firm.

Stuffed Peppers (12 Servings).

Take 1 small onion, 2 slices bacon; chop finely and cook together; add 1 cup tomato, crumbs enough to thicken, ½ teaspoon salt; fill peppers; cover with crumbs; brown in hot oven. Chopped ham or veal may be used instead of bread crumbs.

Macaroni a la Italienne (100 Servings).

Protein, 1,422 grams; fat, 741 grams; carbohydrates, 5,561 grams; calories, 33,402.

Take 3 packages macaroni, 1 gallon tomato, 2 pounds bacon, 2 pounds cheese, 8 to 12 green peppers (according to size), 10 to 12 medium-sized onions; boil macaroni in salted water until tender; boil tomato, onion, and pepper one-half hour; fry bacon (cut into 1-inch strips); cut cheese fine; mix all together and bake one hour.

EGGS.

Eggs a la Buckingham (2 Servings).

Protein, 10 grams; fat, 9 grams; carbohydrates, 2 grams; calories, 124.

Take 1 egg, 3 tablespoons milk, few grains salt; beat egg, add salt and milk, and beat well; then scramble over a slow fire; when nearly cooked, serve on toast; sprinkle with 1½ teaspoons grated cheese, and toast under the broiler to melt cheese.

In some sections of the country a poached egg served on toast, and having the grated cheese sprinkled over it, is called egg a la Buckingham.

To cook an egg in water, whether poached or in the shell, the egg should be dropped into boiling water and then removed to a lower heat. The water should not boil while the egg is in it.

Eggs a la Goldenrod (2 Servings).

Protein, 10 grams; fat, 21 grams; carbohydrates, 10 grams; calories, 269.

Take 1 egg, hard cooked; white sauce made of 1 tablespoon flour, 1 tablespoon butter, ⅓ cup milk, pinch of salt (see cream soups); cut white of egg into strips, stir them

into the white sauce, and pour on a slice of toast; put yolk through a puree strainer and sprinkle over the serving.

Egg in Nest (1 Serving).

Separate egg yolk and white; beat white until stiff and dry; pile lightly on a piece of toast, leaving a nest in the center into which the yolk may be dropped; put into an oven or under a broiler until the white is lightly browned and the yolk cooked.

Omelet (1 Large or 2 Small Servings).

Protein, 7 grams; fat, 9 grams; carbohydrates, 6 grams; calories, 111.

Take 1 egg, 1 teaspoon butter, 1 tablespoon boiling hot water, few grains salt (an omelet made with hot water is less likely to be tough than if made with milk); add salt and water to yolk and beat well; beat white until stiff, then fold into yolk; grease pan with 1 teaspoon butter; cook omelet over a slow fire, finishing the cooking in the oven; fold and turn on a hot plate.

Variations may be made by adding one of the following to the omelet before folding: jelly, grated cheese, oranges (cut very fine), chopped parsley, minced ham, chipped beef (cut fine), pimento (cut fine).

Egg Souffle (4 Servings).

Protein, 22 grams; fat, 58 grams; carbohydrates, 19 grams; calories, 682.

Take 2 eggs (yolks and whites beaten separately); add salt and paprika to yolks; white sauce made of 1 tablespoon flour, 1 tablespoon butter, ½ cup milk, ½ cup cream; stir yolks into the white sauce; remove from fire and fold in stiffly beaten whites; pour into individual

molds or a casserole, place in pan of hot water, and bake in moderate oven twenty to thirty minutes. This may be served with highly seasoned sauce if desired.

Eggs in Tomato.

Scoup out the center from 1 small tomato, drop in 1 egg and sprinkle with few grains salt; add tiny bit of butter and few bread crumbs; cook in a moderate oven fifteen minutes.

SALADS.

Salads are valuable in the dietary because of their attractiveness and the many ways in which they can be made to lend variety. They are often more appetizing than nourishing. To be appetizing, they should always be crisp and cold.

They may be garnished with head lettuce, leaf lettuce (plain or shredded), watercress, endive, chicory, nasturtium leaves, parsley, or many other green leaves which are available during the spring and summer. Any of these, except parsley, may be served as a salad by itself.

All green salads should be served with French dressing.

Apple Salad with Cranberries (50 Servings).

Take 6 quarts uncooked apples cut small, 3 quarts cooked cranberries, 1 pound white grapes cut into quarters, 1 pound nuts, juice of 1 orange, juice of 1 lemon, a little grated rind of lemon.

Brazilian Salad.

Cut white grapes into halves (remove seeds), equal quantity pineapple (shredded or cut fine), ¼ quantity celery, ¼ quantity nuts.

Hot Chicken Salad (60 Servings).

Take 3 quarts chicken (cut fine), 4 cans cooked peas, ½ can pimento, ¼ cup lemon juice, 1 quart white sauce made of equal parts milk and chicken broth, salt, ¾ cup flour. Serve with toast points.

Cottage Cheese Salad (70 Servings).

Take 3 "containers" milk (15 or 16 quarts); keep warm until sour; heat until curd forms, drain from milk, squeeze through cheese cloth; add 3 bunches celery chopped very fine, 1 cup chopped olives, enough mayonnaise dressing to soften; 1 cup chopped nuts may also be added.

Cream Cheese (60 Servings).

Mix cream cheese with chopped pecans; mold in 2-inch brick; cut into ½-inch slices. Serve a heart of beet on each slice.

Date and Cheese Salad (60 Servings).

Cream 6 packages cheese with 8 tablespoons boiled salad dressing; wash dates, remove stones, and fill centers with cream cheese mixture; chopped nuts may be added to cheese. Serve 3 dates for a helping. Six packages will fill 170 dates.

Jardiniere Salad (60 Servings).

Take 8 cans peas, 1 cup peppers chopped fine, 1 cup onions chopped fine, 1½ cups sweet pickle chopped fine, 2 cups grated cheese; cheese to be either mixed through or sprinkled on top.

Orange and Mint Salad (50 Servings).

Take ¾ cup finely chopped mint and 16 large oranges; mix thoroughly and let stand several hours. Served with dressing made of 8 tablespoons powdered sugar, 4 tablespoons lemon juice, 4 tablespoons sherry.

Vegetable Salad.

No. 1.

Take 2 parts peas, 1 part green peppers cut into strips; grated cheese (American or Swiss) to be sprinkled over the top. Serve with French dressing.

No. 2.

Take tomato sliced, green pepper (cut into strips and put over slice). Serve with French dressing.

Peach Salad.

Halve and stone large fresh peaches; fill the cavities with a mixture of broken walnuts, pieces of pear, and a little celery or minced parsley; chill. When serving, garnish with parsley and serve with whipped cream dressing.

Pecan Salad.

Place shredded lettuce in bottom of dish, with long, narrow strips of American cheese across it; sprinkle chopped pecans over the whole. Serve with French dressing.

Stuffed Pepper.

Take 1 firm green pepper of as round a shape as possible; cut off the stem end and scoop out all the pulp; let it stand in salted water ten minutes; wipe dry and fill with a mixture (tightly packed) made of 1 soft cream cheese, ¼ cup chopped English walnuts mixed with French dressing; let stand two or three hours; slice neatly with a sharp knife (crosswise). The white circles of cream cheese with green pepper rims make a very attractive appearance served on crisp lettuce leaves. French dressing should be served with the salad.

Tomato Jelly (100 Servings).

Take 4 quarts tomato, 2 quarts water, 3 bay leaves, 1 dozen cloves, 1 small onion, 3 sprigs parsley, 4 teaspoons salt, 4 tablespoons sugar; cook one hour; strain; heat and

pour on gelatin made of 8 tablespoons or 4 envelopes gelatin dissolved in 1 pint cold water.

Avacado or Alligator Pear.

The avacado or alligator pear is being used to a much greater extent each year, and it should be. As with the artichoke, many people have to learn to like them. They have much value as a food, and may be served in many ways.

AS A SALAD.

No. 1.

Cut into longitudinal sections. Serve with French dressing.

No. 2.

Slice the avacado, add equal parts sliced cucumber and sliced tomato and few shreds pepper. Serve with either mayonnaise or French dressing.

No. 3.

Aspic—Mash the avacado, stir in a solution of gelatin which has been soaked in hot water; flavor with salt, cayenne, and lemon juice; let it become solid; cut into cubes. Serve with mayonnaise.

AS A DESSERT.

Cut into cubes. Serve with sugar and cream.

WITH SOUP.

Slice or mash them, and serve in any stock soup. The fruit may be cut in half or in sections and served, as cantaloupe, with salt.

SALAD DRESSINGS AND SAUCES.

Tartar Sauce (50 Servings).

Take 1 quart mayonnaise and ½ cup whipped cream, and fold together; add 6 medium pickles, 3 tablespoons capers, 3 tablespoons parsley, 1 shallot onion, all chopped

very fine; ¼ teaspoon paprika, ¼ teaspoon celery salt, little salt and pepper.

Mayonnaise Dressing (3½ Quarts).

Mix well 1 tablespoon mustard, 1 tablespoon salt, 1 tablespoon powdered sugar, 1 teaspoon cayenne; add 6 egg yolks well beaten, alternated with ½ cup vinegar and ½ cup lemon juice; 4 to 5 cups olive oil. All ingredients must be kept cold, and the mixture should be beaten constantly while adding the oil and acid.

Boiled Salad Dressing (3 Quarts).

Take 8 tablespoons flour, 4 tablespoons mustard, ¾ cup sugar, 2 tablespoons salt, pinch cayenne; mix and add 3 cups vinegar; cook until thick; add 12 eggs beaten and mixed with 6 cups milk; beat vigorously; remove from fire at once.

French dressing should be made with the proportion of 3 parts oil to 1 part acid. The acid may be lemon juice or vinegar, or a mixture of both. The dressing may be flavored with paprika, tabasco, ketchup, Worcestershire sauce, or any relish desired.

Sauce Valentine.

Into 1 cup mayonnaise dressing beat 2 tablespoons grated horseradish and 1 teaspoon mustard; fold in ¼ cup whipped cream; add salt and pepper as needed. Serve with tomato jelly, mint jelly, jellied vegetables, or with cold meat.

Oyster Cocktail Sauce (40 Servings).

Take 1½ cups ketchup, 1 cup acid (lemon and vinegar mixed), 1 teaspoon tabasco sauce, 1 teaspoon salt; mix thoroughly; 6 to 8 oysters in each serving; put 1 table-

spoon sauce on oysters; small amount of finely chopped celery on top.

Horseradish Sauce.

No. 1. (50 Servings.)

Take 3 cups grated horseradish root, 1 cup vinegar, salt, cayenne, 4 tablespoons whipped cream folded into the mixture.

No. 2. (150 Servings.)

Mix 2 cups horseradish root with 3 quarts mayonnaise dressing. This is especially good served with ham.

Hollandaise Sauce (45 Servings).

Take 2½ cups butter, 10 egg yolks, 5 tablespoons lemon juice, 1¼ teaspoons salt, cayenne, 2 cups boiling water; divide butter into 3 parts; add ⅓ to yolks in double boiler; cook until thick, adding second part; when thick, add third part, being careful to stir thoroughly and prevent curdling; add water, lemon juice, and season; cook until thick. This is to be served with steaks and fish, or it may be served with artichokes or asparagus.

Currant Mint Sauce.

Take 1 quart currant jelly (separated, but not beaten), 1 scant cup finely chopped mint leaves, shavings from rinds of 2 oranges. Served with lamb.

Cranberry Jelly.

Measure berries; add ½ as much water as fruit; cook until berries are soft; strain; add ½ as much sugar as berries.

Bernaise Sauce for Meat (15 to 20 Servings).

Take 3 tablespoons finely chopped shallot (small mild onion), ½ dozen peppercorns or 1 green pepper, ¼ cup vinegar; simmer until nearly evaporated; add 2 table-

spoons butter, 3 egg yolks well beaten; cook in double boiler, stirring briskly; meanwhile add 2 more tablespoons butter; when thickened, add salt, paprika; strain; add 1 teaspoon each of tarragon and chervil, or 1 tablespoon tarragon vinegar.

SAUCES FOR PUDDINGS.

Maple Pudding Sauce (60 Servings).

Take 8 egg yolks, 1¼ cups maple syrup; cook until smooth; strain; beat until cool; fold in 1 quart whipped cream.

Orange Sauce for Pudding.

Take 2 cups butter, 6 cups powdered or brown sugar; cream; add grated rinds of 3 oranges, 2 cups boiling water, 3 cups orange juice (last).

Hot Chocolate Sauce for Pudding (6 Servings).

Take 1 square unsweetened chocolate (melted), 1 tablespoon butter; blend thoroughly; pour on gradually, while stirring constantly, ⅓ cup boiling water, 1 cup sugar; boil fifteen minutes; flavor with vanilla.

Sauce for Bananas (Baked or Banana Salad).

Mash banana; add olive oil; thin with lemon juice. Serve on banana.

DESSERTS.

Angel Custard.

Protein, 48 grams; fat, 39 grams; carbohydrates, 78 grams; calories, 856.

Take 1 quart milk; heat and pour over stiffly beaten whites of 4 eggs, folding whites into milk while pouring; 2 tablespoons pulverized sugar; 2 drops almond extract

or 2 tablespoons shredded almonds; bake in molds; cover with macaroon crumbs.

Angel Parfait (15 Servings).

Protein, 24 grams; fat, 89 grams; carbohydrates, 142 grams; calories, 1,468.

Take ½ cup sugar, ½ cup water, whites of 3 eggs, 1 pint cream; place sugar and water over fire in a sauce pan and stir until sugar dissolves; boil without stirring until it spins a thread; meanwhile beat until stiff and dry the egg whites and add to them slowly the hot syrup after it has been taken from fire about one-half minute; when cold, stir in gently 1 pint whipped cream; put into mold, and pack in ice and salt for four hours.

Coddled Apples.

Pare and core apples and cook in a thick syrup, turning occasionally to insure even cooking; skim the apples out of the syrup and fill the centers with chopped nuts, or jelly, or whipped cream, or a combination of any of these; pour the syrup around the apples and let it stand until jellied.

California Cream (16 Servings).

Protein, 79 grams; fat, 62 grams; carbohydrates, 258 grams; calories, 1,924.

Take 2 tablespoons gelatin, 1 cup cold milk, 3 cups hot milk, ½ cup sugar, 4 eggs beaten separately, 1 teaspoon vanilla, ¼ teaspoon salt; soak gelatin in cold milk and dissolve in hot milk; add 2 tablespoons water to yolks of eggs and beat well; to them gradually add the sugar and salt and beat until sugar is well beaten in; stir into the hot milk and let it almost reach the boiling point; remove from fire at once, and, when cool, pour over the stiffly beaten whites of eggs, to which have been added 6 table-

spoons powdered sugar; beat together; add flavoring and mold.

Cantaloupe Sundae (100 Servings).

No. 1.

Make soft custard of ½ cup sugar, 1 teaspoon flour, 1 egg, 1 cup milk; add ½ cup chopped meats or fruit; freeze and fill ½ cantaloupe.

No. 2.

Take 3 quarts cream whipped and stiffened with 6 tablespoons gelatin which has been soaked in 1 cup cold water and dissolved in 1 quart hot water; fold into this finely chopped preserved ginger and 1 cup powdered sugar.

Caramel Custard (45 to 50 Servings).

Protein, 285 grams; fat, 298 grams; carbohydrates, 912 grams; calories, 7,529.

Take 4 quarts milk heated, 2 dozen eggs beaten slightly, 1 teaspoon salt, 3 cups sugar caramelized, 1 tablespoon vanilla; bake in pan surrounded with warm water.

Caramelized Apples.

Protein, 103 grams; fat, 451 grams; carbohydrates, 3,425 grams; calories, 18,180.

Take 60 apples pared and cored; cook and boil them together until soft in 8 cups water, 6 cups sugar, ½ cup lemon juice; fill centers with 8 cups brown sugar, 2 cups thin cream, ½ cup butter, 3½ cups chopped nuts, boiled together until it forms a soft ball in water. Serve with whipped cream.

Charlotte Russe (75 Servings).

Take 4 tablespoons or 2 packages gelatin and soak in 2 cups cold water; dissolve gelatin in 1 quart hot water;

2 cups sugar, 9 teaspoons vanilla; when slightly hardened, fold in beaten whites of 12 eggs; 2 quarts whipped cream. Serve with ladyfingers.

Cherry Sponge (25 Servings).

Take 1 cup sugar, 1 cup water; add 1 quart pitted cherries; simmer until soft; press through colander; ½ box gelatin dissolved in ½ pint water in which pits have been stewed, and add the fruit; when jellylike, whip to froth; add beaten whites of 2 eggs; mold; decorate with cherries and whipped cream.

Coffee Ice Cream (Individual Freezer).

Protein, 8 grams; fat, 31 grams; carbohydrates, 68 grams; calories, 583.

Take ¼ cup milk, 1 tablespoon coffee, 4 tablespoons sugar, and scald together; 1 egg yolk, dash of salt; cook in double boiler one minute; strain; add ½ cup cream; freeze.

Cranberry Ice (100 Servings).

Take 8 quarts cranberries, 4 quarts water, 4 quarts sugar, juice 12 lemons (1½ cups); cook cranberries in water; force them through a sieve; add 1 to 2 quarts water; add sugar and lemon juice; freeze to a mush.

Cream Puffs (95 Servings).

Protein, 161 grams; fat, 509 grams; carbohydrates, 340 grams; calories, 6,839.

Take 4 cups water, 2 cups butter, 4 cups flour, 16 eggs; boil water; add butter; when at boiling point again, stir in flour all at once and beat until smooth; cool slightly; add unbeaten eggs one at a time; bake thirty minutes.

Filling for Cream Puffs (95 Servings).

Protein, 103 grams; fat, 95 grams; carbohydrates, 904 grams; calories, 4,917.

Take 6 cups milk heated; mix well 1¼ cups flour, 3 cups sugar, and 1 teaspoon salt, and add to hot milk; when starch is well cooked, add 6 eggs (well beaten), stirring constantly; remove from fire; add 3 teaspoons vanilla or any desired flavoring.

Date and Apple Meringue.

Bake apples; fill centers with stewed dates; cover with beaten whites of eggs into which powdered sugar is folded; 1 tablespoon sugar to 2 whites of eggs; place in oven to brown meringue.

Steamed Date Pudding (10 to 12 Servings).

Protein, 23 grams; fat, 15 grams; carbohydrates, 450 grams; calories, 2,528.

Chop finely ¼ pound dates; add 1 cup brown sugar, 2 cups bread crumbs, ¼ pound chopped suet, 2 eggs, juice and grated rind of 1 lemon, 1 tablespoon flour, 1 tablespoon molasses; steam three hours.

Fruit Cocktail (75 Servings).

Take 8 grapefruits, 5 cans shredded pineapple, 12 bananas, 1 bottle maraschino; cut into small pieces, mix, chill. Serve with sauce made of 1 cup sherry, 6 cups sugar, 2 teaspoons salt.

Grape Ice (3 Servings).

Carbohydrates, 75 grams; calories, 300.

Make syrup of ½ cup water and ¼ cup sugar; cool; add ¼ cup grape juice, ½ teaspoon lemon; cool and freeze.

Hamburg Sponge (60 Servings).

Protein, 64 grams; fat, 48 grams; carbohydrates, 246 grams; calories, 1,692.

Heat juice of 2 lemons and ½ cup sugar; beat together yolks of 8 eggs and ½ cup sugar and add to mixture; cook in double boiler until thick; add 1 tablespoon gelatin softened in ⅓ cup cold water; pour into a dish, and, when partly set, fold in stiffly beaten egg whites.

Heavenly Hash (75 Servings).

Take ½ dozen oranges, 4 No. 2½ cans sliced pineapple, 1 dozen bananas, 2 cups nuts, maraschino cherries.

Huntington Cream (80 Servings).

Protein, 581 grams; fat, 1,625 grams; carbohydrates, 1,373 grams; calories, 22,755.

Scald 4 quarts milk with 6 cups almonds; beat yolks of 24 eggs and add 4 cups sugar and 1 teaspoon salt; combine mixtures and cook in double boiler, stirring constantly; add 12 teaspoons gelatin soaked in 4 cups cold water; cool slightly; add 4 teaspoons vanilla; when partly solid, cut and fold in 1 quart heavy cream, beaten stiff; mold and chill.

Plain Ice Cream (100 Servings).

Protein, 290 grams; fat, 773 grams; carbohydrates, 1,834 grams; calories, 15,559.

Take 5 quarts milk; 6 cups sugar and ½ cup flour well mixed and add to milk; when starch is cooked, add 8 eggs or 12 egg yolks, 3 quarts cream, 3 tablespoons vanilla; freeze.

Lemon Ice (3 Servings).

Carbohydrates, 94 grams; calories, 378.

Make syrup of ¾ cup water and 6 tablespoons sugar; cool; 3 tablespoons lemon juice, few drops vanilla, freeze.

Macaroon Cream (75 Servings).

Take 8 tablespoons or 2 boxes gelatin; make custard of 2 cups cold water, 4 quarts scalded milk, yolks of 24 eggs, 2⅔ cups sugar, 1 teaspoon salt; 5⅓ cups powdered almond macaroons; 8 teaspoons vanilla, whites of 24 eggs; strain into pan; add flavoring and macaroons; when thick, fold in beaten whites of eggs; mold.

Maple Mousse (100 Servings).

Protein, 105 grams; fat, 1,436 grams; carbohydrates, 744 grams; calories, 16,830.

Take 6 tablespoons or 3 packages gelatin soaked in 1 cup cold water, 3 quarts hot water, 1 quart maple syrup, 2 quarts whipped cream; add hot water and syrup to soaked gelatin; fold in whipped cream.

Marshmallow Pudding (85 Servings).

Protein, 45 grams; fat, 761 grams; carbohydrates, 3,938 grams; calories, 22,994.

Take 6 pounds marshmallows and 7 cans pineapple cut into small pieces; put layers alternately in pan, with few nuts sprinkled over; let stand several hours. Serve with small amount of whipped cream on top; 1 quart whipped cream is enough for this recipe.

Toasted Marshmallows.

Protein, 171 grams; fat, 1 gram; carbohydrates, 1,920 grams; calories, 8,392.

Take 8 tablespoons granulated gelatin, 8 cups boiling water, 8 cups sugar, whites of 20 eggs, 1½ tablespoons vanilla, macaroons; dissolve gelatin in boiling water; add sugar; when dissolved, put bowl on ice; add egg whites and vanilla; beat until mixture thickens; turn into shallow pan; chill; cut into squares and roll in macaroon crumbs. Serve with cream.

Pineapple Bavarian (60 Servings).

Protein, 148 grams; fat, 731 grams; carbohydrates, 1,171 grams; calories, 11,636.

Take 2 small cans or 6 cups grated pineapple; 2 cups sugar, 2 boxes gelatin (8 tablespoons), 1 quart whipped cream, juice of 6 lemons, 1 cup cold water, 3 cups boiling water, whites of 8 eggs; soak gelatin in 1 cup cold water; pour 3 cups boiling water over gelatin; put pineapple and sugar in sauce pan; let simmer until sugar is dissolved; add this to gelatin and lemon juice; let cool; when thickening add whipped cream and beaten whites.

Pineapple Pudding.

Protein, 101 grams; fat, 122 grams; carbohydrates, 4,026 grams; calories, 17,641.

Take 10 No. 1½ cans shredded pineapple, heated; mix well 2½ cups sugar and 1½ cups cornstarch, and add to pineapple; 1 quart water; cook until starch is clear and thoroughly cooked; add 10 eggs well beaten; remove from fire at once.

Prune Loaf (75 Servings).

Protein, 208 grams; fat, 177 grams; carbohydrates, 1,061 grams; calories, 6,669.

Take 3 boxes or 12 tablespoons gelatin soaked in 1 cup cold water and dissolved in 2½ quarts hot water; chop medium fine 1½ boxes raisins, 2 cups English walnut meats, 2½ quarts prunes, 1 tablespoon cinnamon; add ¾ cup lemon juice; mix all together; mold. Serve with whipped cream.

Prune Whip (50 Servings).

Protein, 116 grams; fat, 718 grams; carbohydrates, 1,577 grams; calories, 13,486.

Take 3 pounds prunes washed and soaked in cold water overnight; bring to boil, cook until soft; wash and

remove stones; add 6 tablespoons gelatin, 1½ cups sugar, ½ cup lemon juice, 2 cups cold prune juice, 6 cups boiling prune juice; set in a pan of ice, and, when partly set, add 1 quart whipped cream.

Rice Surprise (85 Servings).

Protein, 223 grams; fat, 2,191 grams; carbohydrates, 3,132 grams; calories, 33,897.

Take 2 quarts rice; cook in 6 quarts water; cool; add 5 cans shredded pineapple; sugar; let stand several hours; add 3 quarts whipped cream.

Spanish Cream (75 Servings).

Protein, 304 grams; fat, 205 grams; carbohydrates, 624 grams; calories, 5,598.

Take 1 quart hot strong coffee, 3 cups cold milk, 2 quarts and 1 cup hot milk, 10 tablespoons or 2½ boxes gelatin, 15 egg whites, 15 egg yolks, 2 cups sugar, salt; soak gelatin in cold milk and add boiling coffee; scald milk and add beaten yolks and sugar; cook over hot water until it coats a spoon; add coffee with dissolved gelatin; chill; when set, fold in beaten egg whites.

Strawberry Bavarian (50 Servings).

Protein, 112 grams; fat, 719 grams; carbohydrates, 533 grams; calories, 9,312.

Take 5 cups crushed strawberries, 2 cups sugar, juice of 5 lemons, 6 tablespoons gelatin, 4 cups water, 6 egg whites, 1 quart whipped cream; soak gelatin in 1 cup cold water; add 3 cups boiling water, sugar, lemon juice, and strawberries; let stand on ice until thickened; when thickening, fold in whipped cream and beaten egg whites; crush strawberries with some of the sugar and let stand for a time before using.

Washington Sponge (50 Servings).

Protein, 128 grams; fat, 1 gram; carbohydrates, 1,103 grams; calories, 4,948.

Take 6 tablespoons or 1½ boxes gelatin, 1 quart cold water, 2 quarts boiling water, 4½ cups sugar, 1 cup lemon juice, 15 egg whites; soak gelatin in cold water; add boiling water, sugar, lemon juice; when cool, put on ice until thick; fold in egg whites beaten stiff. Serve with custard sauce made of 12 egg yolks, 1 cup sugar, 3 pints milk, ¾ cup sherry; cook in double boiler until it coats a metal spoon; add sherry and serve cold.

Whipped Cream Dessert (100 Servings).

Protein, 63 grams; fat, 1,077 grams; carbohydrates, 164 grams; calories, 10,980.

Take 1½ quarts whipped cream, 3 tablespoons gelatin soaked in ½ cup cold water; 1 cup boiling water; add to soaked gelatin; ½ cup sugar; add cooled gelatin solution slowly to whipped cream, beating at the same time. Serve with raspberry sauce made as follows:

Raspberry Sauce (100 Servings).

Take 1 tablespoon cornstarch moistened with water; cook until smooth; 2 tablespoons sherry; add cornstarch with sherry to 2 cups jam.

Milk Sherbet (160 Servings).

Protein, 634 grams; fat, 768 grams; carbohydrates, 17,550 grams; calories, 75,666.

Make syrup of juice of 40 lemons and 8 quarts sugar; heat slightly 20 quarts milk and add to the syrup while it is still slightly warm, beating all the time; freeze at once to prevent curdling.

Fruit Gelatin (75 Servings).

Soak 6 tablespoons or 3 packages gelatin in 1 quart cold water; dissolve gelatin in 2 quarts hot water and 1 quart fruit juice; 3½ to 4 quarts fruit; sugar according to kind of fruit used. Serve with 1 quart whipped cream.

Neapolitan Pudding (150 Servings).

Take 4 packages or 8 tablespoons gelatin soaked in 2 cups cold water and dissolved in 1 quart hot water; divide into 3 equal parts; to 2 cups add 1 quart coffee, sugar, and vanilla; to 2 cups add 1 pint maraschino, 1 pint water, and sugar; to 2 cups add 1 pint lemon juice, 1 pint water, and sugar; let each part become jellylike in consistency; put in pans in layers; when thoroughly set, slice and serve.

Orange Pudding (45 Servings).

Mix juice of 24 oranges, juice of 4 lemons, and 4 cups sugar; add 16 egg yolks beaten; add ¼ cup cornstarch; cook in double boiler until it begins to thicken; add 3 tablespoons gelatin that has been soaked in ½ cup cold water and dissolved in ½ cup boiling water; when it begins to thicken, add egg whites beaten stiff.

Peach Melba.

Place in bottom of dish ½ of a preserved peach; cover with layer of ice cream, laying the other half of the peach on top; cap with 1 spoon whipped cream; pour over 1 tablespoon peach syrup; garnish with crystal cherries.

Baked Pears.

No. 1.

Wash and core pears; put pieces of candied or preserved ginger in centers; sprinkle generously with brown sugar; put enough water in the pan to make a good syrup; bake forty-five minutes.

No. 2.

Instead of using ginger, stick several cloves into each pear.

Wine Jelly (80 to 85 Servings).

Soak 12 tablespoons or 6 envelopes gelatin in 3 cups cold water; 2½ quarts boiling water; dissolve gelatin; 2 quarts sugar, 3 cups sherry, 3 cups orange juice, 1½ cups lemon juice.

BREADS.

Bread, White (1 Loaf).

With milk—Protein, 47 grams; fat, 18 grams; carbohydrates, 286 grams; calories, 1,489.

Take 1 cup water or milk which has been boiled, 1 teaspoon salt, 1 teaspoon sugar, 1 teaspoon butter or lard, ½ compressed yeast cake dissolved in ¼ cup water; flour to make stiff batter; add the salt and sugar to the milk, which has been boiled, while it is still warm; let cool; add the butter and the dissolved yeast cake; beat in enough flour to make stiff batter; let rise until the surface is covered with bubbles; add flour to make stiff dough; let rise again; shape into loaves, handling as little as possible; let rise until it doubles its bulk; bake in hot oven.

Luncheon Rolls.

Protein, 182 grams; fat, 230 grams; carbohydrates, 1,024 grams; calories, 6,949.

Take 3 cups milk; add to milk when removed from flame ¾ cup sugar, 1½ teaspoons salt, ¾ cup butter; 3 cakes compressed yeast dissolved in ¾ cup tepid water; flour to make stiff batter; let rise; add 6 eggs and grate rind of 1 lemon; knead stiff; let rise again; shape into finger rolls or round rolls and bake.

Parker House Rolls.

Protein, 47 grams; fat, 43 grams; carbohydrates, 316 grams; calories, 1,847.

Set sponge as for bread, using all milk instead of water; after sponge has risen, add 2 tablespoons butter melted and 2 tablespoons sugar; add flour enough to knead; when kneaded enough, roll the dough to ½ inch thickness; cut with a large-sized cooky cutter; indent a little with back of case knife above the center; butter one side and fold over the other side; let rise again and bake in hot oven twenty to twenty-five minutes.

Shamrock Rolls.

Same as Parker House Rolls.

Use the same mixture as for Parker House rolls; after dough has been kneaded, roll into balls ¾ inch in diameter; put 3 balls together in a muffin pan; let rise until light and bake in hot oven.

Swedish Rolls.

Protein, 99 grams; fat, 46 grams; carbohydrates, 428 grams; calories, 2,326.

Use the same recipe as for Parker House rolls; roll to ¼ inch thickness; spread with melted butter, 2 tablespoons sugar, ⅛ teaspoon cinnamon, ⅓ cup stoned raisins chopped, 2 tablespoons chopped citron; roll mixture like jelly roll; cut into ¾-inch pieces; put close together in buttered pan, flat side down; let rise until very light and bake in hot oven twenty minutes.

Hot Cross Buns.

Protein, 62 grams; fat, 53 grams; carbohydrates, 593 grams; calories, 3,111.

Take 1 cup scalded milk, ¼ cup sugar, 2 tablespoons butter, ½ teaspoon salt, ½ yeast cake dissolved in ¼ cup

warm water, ¾ teaspoon cinnamon, 3 cups flour, 1 egg well beaten, 1 cup raisins, 1 cup currants; set sponge as for bread, and, when risen, add egg, spice, and fruit, rest of flour, and let rise second time overnight; knead in morning; keep it very soft, form into biscuit shapes, place close together in pans; let rise until light and bake about twenty minutes in hot oven; before they go into oven make a cross on them; brush surface with milk.

Brown Bread.

Protein, 53 grams; fat, 53 grams; carbohydrates, 293 grams; calories, 1,860.

Take 1 cup sour milk, ½ cup molasses, 1 teaspoon soda, ½ teaspoon salt, 2¼ cups graham flour, ½ cup English walnuts (if desired); mix salt, sour milk, soda, and molasses; add flour and nuts; bake about one hour. This makes two small loaves. Baking powder cans (1-pound) are good for baking it.

Boston Brown Bread.

Protein, 7 grams; fat, 3 grams; carbohydrates, 55 grams; calories, 279.

Take 2 tablespoons rye flour, 2 tablespoons graham flour, 2 tablespoons cornmeal, ½ teaspoon baking powder or 3-16 teaspoon soda if sour milk is used, 1-16 teaspoon salt, 1 tablespoon molasses, ¼ cup milk (sweet or sour); mix, but do not sift dry ingredients; add dry ingredients to liquid; place in well-buttered pan and steam two hours; place in oven fifteen minutes to dry out.

Muffins (50 Muffins).

Protein, 287 grams; fat, 364 grams; carbohydrates, 1,641 grams; calories, 111,439.

Mix and sift 4 quarts flour, 10⅔ tablespoons baking powder, 4 teaspoons salt, 1 cup sugar; 2 quarts milk, 1

cup melted butter, 8 eggs; add gradually milk, eggs (well beaten), and melted butter; bake twenty-five minutes.

Corn Muffins.

Protein, 43 grams; fat, 46 grams; carbohydrates, 350 grams; calories, 1,995.

Take 1 cup white flour, 1 cup cornmeal, 1½ teaspoons cream of tartar, 1 teaspoon soda, 1 egg, 2 tablespoons butter, ½ teaspoon salt, ½ cup sugar, 1 cup warm milk; mix and sift the flour, cornmeal, soda, and cream of tartar; beat the egg and add sugar to it; melt the butter in the milk and add to the egg; add the first mixture to the second, adding milk and butter last; put into buttered muffin pans and bake in hot oven fifteen to twenty minutes.

Popovers (12).

Protein, 44 grams; fat, 36 grams; carbohydrates, 102 grams; calories, 874.

Take 1 cup flour, 1 cup milk; mix 2 eggs and 1 tablespoon butter; add flour and milk alternately, beating the mixture; bake in hot oven thirty-five to forty-five minutes.

Fritters.

Protein, 113 grams; fat, 45 grams; carbohydrates, 593 grams; calories, 3,238.

Take 3 eggs, 2 tablespoons sugar, 1 pint sour milk, 1 teaspoon soda, salt, flour to make stiff batter; beat eggs until light; add sugar, salt, milk, flour, and soda. Corn, rice, or bananas may be added to this batter, or they may be served plain with sauce.

Sauce for Fritters.

Take ½ teaspoon cornstarch, ½ cup cold water; cook until clear; add 1 cup crushed fruit, jam, or marmalade.

SANDWICHES.

Sandwiches may serve a very good purpose in supplying the extra nourishment required for patients on a house diet, and they also make a most acceptable change for the nurses for supper on Sunday nights or holidays.

To make dainty sandwiches, the bread should be cut thin and the crusts removed, and the butter should be creamed and spread on the bread before cutting from the loaf. Bread should be at least one day old. If sandwiches are wrapped well in waxed paper, they will keep fresh and moist for a half day or more.

Cheese sandwiches may be made in a great variety of ways, and they have high food value.

Cheese Sandwiches.

No. 1.

Neufchatel or cream cheese may be mashed and moistened with salad dressing, and mixed with chopped pimento, or olives, or nuts. These are especially good when served with brown bread. They may also be made of salt wafers or zephyrettes.

No. 2.

Zephyrettes sprinkled with grated American or Swiss cheese, seasoned with cayenne; put under a flame and melt the cheese.

No. 3.

Cream cheese mixed with orange marmalade and chopped pecan nuts. These may also be served on crackers, or they make a very dainty sandwich if made of bread cut very thin and rolled.

No. 4.

Cream cheese moistened with salad dressing, mixed with finely chopped pimento, put between a slice of white and a slice of rye bread.

No. 5.

Cream cheese mixed to a paste with sherry and spread upon whole wheat bread.

No. 6.

Mash Swiss or American cheese with the yolks of hard-cooked eggs; chop the whites and season with salt, mustard, salad dressing, and 1 teaspoon chopped capers; use graham, whole wheat, or rye bread.

Fruit Sandwiches.

No. 1.

French prunes, cut small, and mixed with nuts and cream.

No. 2.

Candied cherries chopped and moistened with orange juice. These are particularly appetizing made with crackers and a cherry placed on top.

No. 3.

Cook dates and remove seeds; mash or cut the dates; add lemon juice. These make very good sandwiches, but, if one desires, chopped nuts may be added. Peanuts and dates are a very good combination.

No. 4.

Figs may be cooked and served in the same way as are dates in No. 3.

No. 5.

Chopped pecans and apricot jam may be used, with either white or brown bread.

No. 6.

Wash raisins and cut into small pieces; mix with finely chopped preserved ginger and nuts. These may be served with either white or brown bread.

Club Sandwiches.

These are popular for supper for private patients, and are neither more expensive nor more difficult to prepare than broiled steaks or chops. Lay a piece of chicken on a piece of toast, put slices of bacon across the chicken, cover with a crisp lettuce leaf and plenty of salad dressing; put another slice of toast on top and trim the edges; if slices of toast are very large, cut the sandwich into halves.

Chicken Sandwiches.

Cut chicken into small pieces and mix with chopped olives and celery, or pickles, or pimentoes; nuts may be added if desired; mix with mayonnaise.

Sardine Sandwiches.

Remove skin and bones from sardines; mash to a paste; add equal quantity of mashed or strained yolk of egg which has been hard-cooked; season with salt, cayenne, and lemon juice.

CANAPES.

Canapes are prepared by cutting bread about ½ inch thick and cutting into circles or squares. The bread is then toasted or fried in deep fat or browned in the oven. It may then be covered with a mixture of egg, cheese, fish, or meat, separately or in combination. Canapes may be served hot or cold, and are often served for one of the first courses at a formal dinner.

Sardine Canapes.

Spread circular pieces of toast with sardines from which the bones have been removed; rub to a paste with a small amount of butter a few grains cayenne and a few drops Worcestershire sauce and lemon juice; in the center of

each canape place a stuffed olive. The whites of eggs chopped fine and arranged in a border around the edge add to the attractiveness of the canape.

Ham Canapes.

Chopped ham served on toast, with sauce poured over it. Figaro sauce is most desirable served on these.

Figaro sauce is made by adding to Hollandaise sauce 2 tablespoons tomato puree (tomatoes stewed, strained, and cooked until reduced to a thick pulp), 1 teaspoon finely chopped parsley, and a few grains cayenne.

Anchovy Canapes.

Spread canapes with anchovy paste; chop separately white and yolk of one egg hard-cooked, and arrange alternately on circle; sections divided by sliced olives or pimentoes.

CAKES.

Almond Cookies (Diabetic).

Protein, 153 grams; fat, 363 grams; carbohydrates, 93 grams; calories, 4,247.

Take 6 eggs, 3 tablespoons butter, 3 cups almonds (blanched and ground 3 times), 8 teaspoons glycerin, 1½ teaspoons vanilla extract.

Icing.

Take 1 egg, 3 saccharin pellets if saccharin is desired.

Boston Cookies (100 Small).

Protein, 93 grams; fat, 306 grams; carbohydrates, 798 grams; calories, 6,250.

Take 1 cup butter, creamed; add gradually 1½ cups sugar to butter, 3 eggs well beaten; add 1 teaspoon soda dissolved in 1½ tablespoons hot water; 3¼ cups flour, and

mix and sift with half the flour ½ teaspoon salt, 1 teaspoon cinnamon; add to batter ½ cup raisins (seeded and chopped), 1 cup nuts (chopped), ½ cup currants; add rest of flour.

Fruit Cookies (72 Cookies).

Protein, 307 grams; fat, 927 grams; carbohydrates, 2,909 grams; calories, 20,982.

Take 6 cups light-brown sugar, 3 cups butter or lard (or mixture of both), 6 eggs, 2 cups sour cream or sour milk, 6 teaspoons cinnamon, 3 teaspoons cloves, 3 teaspoons nutmeg, 3 teaspoons soda, 6 cups chopped raisins and nuts, 12 cups flour; mix ingredients in the order given; do not mix very stiff; bake in moderate oven.

Sponge Drops.

Protein, 19 grams; fat, 13 grams; carbohydrates, 247 grams; calories, 1,188.

Take 1 whole egg and 1 egg yolk, beaten until light; gradually beat in ¾ cup sugar, grating of lemon rind, ¼ cup cold water; sift ¾ cup flour, ¼ teaspoon soda, 1 teaspoon cream of tartar; add dry ingredients to liquid; drop on buttered paper and bake in hot oven.

Devil's Food Cake (80 Servings).

Protein, 288 grams; fat, 610 grams; carbohydrates, 2,673 grams; calories, 17,490.

Take 4 cups light-brown sugar, 3 cups grated chocolate or cocoa, 2 cups sweet milk; mix, cook until all is dissolved and let cool; then take 4 cups light-brown sugar and 2 cups butter (cream well), and add 8 eggs and 2 cups sweet milk; 4 teaspoons vanilla, 4 teaspoons soda, 8 cups flour; beat well; add flour and soda sifted together; add first mixture.

Sunshine Cake.

Protein, 79 grams; fat, 61 grams; carbohydrates, 330 grams; calories, 2,213.

Take 10 egg whites, 10 egg yolks, 1 cup flour, 1 cup sugar, 1 teaspoon cream of tartar, 1 teaspoon lemon juice; beat egg whites until dry and stiff; add thickly beaten yolks and continue beating; add sifted sugar, continuing beating; fold in flour, sifted with cream of tartar; bake in unbuttered pan in moderate oven for forty-five minutes.

Sponge Cake.

Protein, 222 grams; fat, 108 grams; carbohydrates, 2,728 grams; calories, 12,813.

Take 16 eggs (beaten separately), 8 cups sugar, 9 cups flour, 8 teaspoons baking powder, 4 cups hot water, 4 teaspoons vanilla; beat yolks of eggs; add sugar, a little at a time; add whites, beaten dry, and then hot water; sift flour and baking powder together and add last.

Sour Cream Cookies (100 Cookies).

Protein, 130 grams; fat, 406 grams; carbohydrates, 1,365 grams; calories, 9,803.

Take 4 eggs (slightly beaten), 3 cups sugar, 1½ cups butter, 1½ cups sour cream, 1 teaspoon cinnamon, 1 teaspoon nutmeg, ½ teaspoon cloves; 2 teaspoons soda, 7 cups flour, 1 teaspoon baking powder, sifted together; salt.

Oatmeal Cookies (100 Cookies).

Protein, 192 grams; fat, 635 grams; carbohydrates, 1,595 grams; calories, 12,877.

Take 5 eggs, 2½ cups brown sugar and 2½ cups butter or butter and lard (creamed), 1 cup sour cream; sift together 5 cups flour, 5 cups oatmeal, 2½ teaspoons soda, 2½ teaspoons cinnamon; add 2 to 2½ cups raisins.

Ice Cream Cake (4 Cakes).

Protein, 185 grams; fat, 435 grams; carbohydrates, 1,433 grams; calories, 10,626.

Take 4 cups sugar and 2 cups butter (cream well), 2 cups milk; sift together 4 cups flour, 1 cup cornstarch, 7 teaspoons baking powder; 4 teaspoons flavoring, 24 egg whites beaten stiff; fold in last.

Fudge Cake (24 Pieces).

Protein, 387 grams; fat, 110 grams; carbohydrates, 585 grams; calories, 4,875.

Take 1½ cups sugar, 5 tablespoons cocoa, ⅜ cup butter, 2 eggs, 2 teaspoons salt, ¾ teaspoon soda, ¾ cup sour milk, 2¼ cups flour, ⅜ cup hot water, 2 teaspoons vanilla; cream butter, sugar, and cocoa together; add eggs and beat well; sift flour with salt and soda, and add alternately with sour milk to cake mixture; stir in hot water and vanilla; beat; bake in flat pan, lined with oil paper, in moderate oven.

Gold Cake (36 Cup Cakes).

Protein, 97 grams; fat, 211 grams; carbohydrates, 761 grams; calories, 5,419.

Take 2 cups sugar, ½ cup butter, 1 cup milk, 16 egg yolks, 3 cups flour, 5 teaspoons baking powder, 1¼ teaspoons flavoring, 1 teaspoon salt; cream butter; add sugar and salt; add well-beaten egg yolks; add milk alternately with flour and baking powder.

Sour Cream Cake.

Protein, 101 grams; fat, 121 grams; carbohydrates, 828 grams; calories, 4,819.

Take 4 cups flour, 2 cups sugar, 1 teaspoon soda, 2 teaspoons cinnamon, 2 teaspoons nutmeg, 1 teaspoon salt, 2

cups sour cream, 4 eggs; sift flour, soda, spices, and salt together; place in bowl and add sugar, cream, and yolks of eggs beaten thoroughly; add whites beaten stiff; mix quickly and bake in hot oven.

Peanut Wafers (24 Wafers).

Protein, 143 grams; fat, 70 grams; carbohydrates, 174 grams; calories, 1,511.

Take 2 tablespoons butter, ¼ cup sugar, 1 egg, ½ cup flour, 1 teaspoon baking powder, ¼ teaspoon salt, 2 tablespoons milk, ½ cup finely chopped peanuts; cream butter and add gradually, while beating constantly, the sugar; add well-beaten egg; mix and sift flour, baking powder, and salt; add to first mixture; add milk and nuts; drop from teaspoon on an unbuttered sheet 1 inch apart, ½ peanut on each; bake in moderate oven twelve to fifteen minutes.

Chocolate Chips.

Protein, 104 grams; fat, 429 grams; carbohydrates, 1,047 grams; calories, 8,617.

Take 1½ cups butter, 3 cups sugar, 6 eggs, 6 squares chocolate, ½ teaspoon salt, a few drops vanilla, 3 cups flour; cream butter and sugar; add eggs well beaten and melted chocolate; add dry ingredients last; spread in thin layer on bottom of pan; bake ten to twenty minutes; cut into finger lengths while hot.

BEVERAGES.

Cocoa (6 Servings).

Mix 3 tablespoons cocoa, 3 tablespoons sugar, ½ teaspoon salt; add 2 cups water; cook in double boiler not less than one-half hour, or boil ten minutes; add 3 cups hot milk; mill. Serve with marshmallows or whipped cream.

Grape Punch (35 to 40 Punch Glasses).

Mix 1 quart grape juice, 1 cup sugar, juice of 4 lemons, juice of 6 oranges; when sugar is dissolved, add 1 quart water; chill. Serve with sprig of mint.

Sangaree.

Take juice of 2 lemons, 3 oranges, 1 pineapple, 1 cup powdered sugar, 1 cup cherries or grapes (cut into halves); shaved ice and water as desired.

Mint Sangaree.

Crush 2 or 3 sprays mint with sugar; put into glass half full of cracked ice; add 4 tablespoons grape juice; fill glass with charged water.

Summer Zephyr (50 Servings).

Take 1½ pounds rhubarb, cut into thin slices; cover with water; add 1 stick cinnamon, 1 bay leaf; cook until tender; strain; add 1 cup sugar; simmer about ten minutes; add 1 pint orange juice, juice of 3 lemons, ½ cup preserved ginger; cool. Serve in tall glasses with shaved ice.

Syllabub (8 Servings).

Take ½ pound sugar, 1 quart lukewarm cream, 1 glass wine; dissolve sugar in wine, and pour on cream slowly, holding pitcher high above wine so as to make mixture froth.

Tea Punch (35 to 40 Punch Glasses).

Take (1) 1 quart water and 1 cup sugar and boil fifteen minutes; then take (2) 3 cups boiling water and 6 teaspoons black tea and steep five minutes; strain 2 into 1; chill; then take (3) grated rind of 1 orange and 2 lemons; cover with sugar; let stand one to two hours; add juice

and ½ cup claret or port; strain 3 through cheese cloth; mix all. Serve cold.

Imperial Drink.

Take 1 dram tartaric acid to 1 pint water, lemon juice to flavor, sugar.

Modified Buttermilk.

Take 1 quart buttermilk, 1 even tablespoon rice; heat the mixture over a small gas flame; stir constantly until it has boiled up three times; add 2 tablespoons sugar and strain.

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